

# Medicine, Logic, or Metaphysics? Aristotelianism and Scholasticism in the Fight Book Corpus

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**Abstract** – *Because we tend to study fight books in isolation, we often forget how difficult it is to understand the precise place they occupy in the sociocultural and historical fabric of their time, and spill the many clues they inevitably contain on their owner, their local society, their precise purpose. In order to unlock that information, we need to study them in their broader sociocultural and historical context. This requires a background and research skills that are not always easily accessible to everyone. To illustrate the point, in this paper I show in some detail what is required to make sense of the claim that Aristotelian philosophy and science influenced the medieval fight books in relevant ways, and that understanding this influence helps us to better understand the fight books per se. I give an outline of the general historical framework, and apply it to a testcase: Talhoffer's Thott 290 2° Ms., with some interesting results. My hope is that this framework may be of some use to other researchers in HEMA Studies who want to dig deeper in sources of interest to them.*

**Keywords** – Medieval Fight Book, *Hausbuch*, Galenic Medicine, Aristotelian Natural Philosophy, Social and Cultural History

## I. INTRODUCTION

It is hardly possible to discuss any aspect of Medieval intellectual life without mentioning Aristotle in some way. Whether it is logic or metaphysics (and hence theology), or practical sciences like medicine, mechanics, and astronomy, the writings of ‘The Philosopher’ exerted an immense influence, and his authority weighed in heavily through a number of direct and indirect sources.

‘Aristotelian’ and ‘Aristotelianism’ are words that students of medieval ideas use constantly and almost inescapably. The widespread usage of these terms by scholars in turn reflects the popularity of Aristotle’s thought itself during the Latin Middle Ages: Aristotle provided many of the raw materials with which educated Christians of the Middle Ages built up the edifice of medieval thought. From 1100 it was difficult to receive a good education in Europe without reading at least some Aristotle, along with authors such as Boethius and Cicero who were heavily indebted to the Philosopher’s teachings. After 1200 no university-trained cleric was likely to be wholly unfamiliar with the essential characteristics of the Aristotelian world-view. Thus, Aristotelianism constituted an indispensable common currency of intellectual intercourse during the Middle Ages.<sup>1</sup>

It is therefore not really a surprise that the topic of Aristotelian influences in European fight books became something of a trope in HEMA Studies over the past years. Pioneering work by, a.o., Brian Price<sup>2</sup> and Jens-Peter Kleinau<sup>3</sup> on the logic of motion in combat and Pierre-Alexandre

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<sup>1</sup> Nederman, ‘Aristotelianism’, p. 563; Colish, *Medieval Foundations*.

<sup>2</sup> Price, *The Martial Arts of Medieval Europe*.

<sup>3</sup> Kleinau, ‘On the Five Words “Vor/Nach, Indes, Stark/Schwach”’.

Chaize<sup>4</sup> on the logic of technical pedagogy in Liechtenauerian sources demonstrated that such claims are based on more than merely flimsy similarities. The intellectual background of the monks who composed the Latin I.33 Walpurgis Manuscript stands out clearly as well.<sup>5</sup> Nowadays it becomes almost commonplace to point out Aristotelian influences in HEMA sources, which range from the fourteenth to as late as the seventeenth centuries.<sup>6</sup>

The problem is, however, that the notion of “Aristotelian influences” is underdefined and often misunderstood, with sometimes harmful consequences for proposed interpretations of the texts at hand (we shall discuss some examples below). This problem is somewhat embedded in the topic itself: Aristotle’s influence worked along several different direct and indirect pathways long before his major works became accessible through a wave of new authoritative Latin translations in the second half of the thirteenth century.<sup>7</sup> Aristotle was recognised as a fundamental *auctoritas* in nearly every intellectual field.<sup>8</sup> This was true not only in subjects like logic, or dialectics, and the interpretation of texts, which will constitute the methodological basis of the medieval university curriculum, but also in subjects like, e.g., medicine, physiology, and body mechanics, that came to their readership through an often different, essentially non-Scholastic, chain of Aristotelian text traditions.<sup>9</sup> There is indeed a tendency to trace this whole body of influences back to the teaching at the medieval universities and summarize it under the heading of “Scholasticism”. However, we will use the term “Scholasticism” in a somewhat narrower sense, so as to emphasize that university culture is broader than scholasticism only, and that its origins and sources are many and diverse.<sup>10</sup> The interaction between university and non-university disciplines, as well as that between practical and theoretical science, was complex and much less rigid than at first glance appears. The borderline remains vague, though, because subjects like natural philosophy and metaphysics are busy crossroads between theory and practice, between method and content.<sup>11</sup> This has implications for applied sciences such as law and medicine, but, as we shall see, also for crafts like martial arts.

Given this state of affairs we need, when we wish to say something meaningful with respect to this topic, to be thorough and precise not just on what, but also on how the surmised Aristotelian influence might have worked on its target. Sadly enough, that is now rarely the case. Often vague references to Aristotle’s work, accessed only through secondary literature or internet resources and cut loose from any specific historical context are mixed with comparative quotes based on superficial textual similarities without proper philological analysis or contextual assessment, to the extent that in itself interesting and potentially relevant conjectures collapse under their own lack of scholarly credibility. This is partly due to a lack of critical historiographical and philosophical expertise on the part of authors studying the material, or to philological barriers that prevent presumed citations or references from being consulted in and connected to original sources (ancient Greek, Arabic, even Latin). Our intention in this article is to clear up a bit of the conceptual and historical thicket that surrounds this theme, and thus to provide a useful basic methodological resource for HEMA researchers from various backgrounds in their own research projects.

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<sup>4</sup> Chaize, ‘Quand la pratique est Logique’.

<sup>5</sup> Aka the Royal Armouries MS. I.33 (FECHT I). Cinato and Surprenant, *Le livre de l'art de combat*. Especially the sections ‘Un codex universitaire’, and ‘L’interprétation scolastique’, pp. XXIX-XLII.

<sup>6</sup> Acutt, ‘Aristotelian Science’, pp. 10-28.

<sup>7</sup> Marenbon, *Later Medieval Philosophy*, pp. 50-58.

<sup>8</sup> Nederman, ‘Aristotelianism’, pp. 563-585.

<sup>9</sup> See below in this article, section III: The Aristotelian tradition in medical literature and practice.

<sup>10</sup> On the many definitions of “Scholasticism”, see Schönberger, *Was ist Scholastik?*, p. 15-33.

<sup>11</sup> Jolivet, *Perspectives*.

The scope of this paper will remain limited to Aristotelian influence exerted by sources dating back to the beginning of the medieval period up to the High Middle Ages (500-1500), and as its target to manuscript fight books from the early fourteenth to the early sixteenth century. These fight books contain treatises on individual combat — the skills and techniques that an individual fighter needs to win a bout, whether the aim is to win a friendly competition, or to kill an opponent. Although these skills might have had their military uses, it is clear that this literature addresses civilian combat as well, maybe even primarily.<sup>12</sup> From the sixteenth century onwards, the emergence of the printing press, the Reformation, and the Scientific Revolution change the sociocultural context drastically and on a large scale, a fact that leaves its traces in the type of fight books published and on the kinds and styles of weapons discussed therein. Military and civilian use become more clearly distinct. Bodily culture changes profoundly, although this process unfolds itself slowly.<sup>13</sup> During the Renaissance period, the flourishing not only of arts and humanities, but also of a unique brand of Neoplatonist hermetic philosophy that favours symbolism and mystical mathematics leaves a strong imprint on the ideas on (the teaching of) fencing of the day, which were typically written by universal minds who had, apart from fencing, other artistic and scientific occupations, like natural philosophy, painting, engineering and architecture.<sup>14</sup> This is not to say that Aristotelianism became suddenly ineffective during that period. One could even say quite the contrary. From the Contrareformation onwards we witness a revival of medieval Scholasticism, but in a new, modernised cloak, known as Early Modern Scholasticism or the Second Scholastic.<sup>15</sup> My claim would be that the influence of this later kind of Scholasticism is more explicitly clear in the development of the French school of fencing, but that claim has to be left here unsubstantiated.

We will tackle our topic in two major sections. First, a section devoted to providing a historiographical and cultural-historical context and timeline that maps the incorporation of Aristotelian sources from Antiquity into Medieval Europe's intellectual universe in a somewhat crude, but orderly fashion, as well as to elaborating on how these sources could have reached our fight book authors. Beware that it cannot be our intention to pursue completeness or historical detail on this topic in the short scope of this article. Details will be context dependent and, based on our categorisation, can be further elaborated upon in the relevant research itself. The timeline has three major thematical ramifications: 1) Logic and epistemology, 2) Medicine and physiology, 3) theology and metaphysics. In this contribution, we shall focus mainly on the first two. In the second section we discuss a few examples from contemporary HEMA literature, where well-intended and sometimes really interesting research tracks get stuck or miss (partially) their point due to lack of clarity about the nature of the Aristotelian connections and the contexts on which

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<sup>12</sup> Verelst *et al.*, 'Introduction'.

<sup>13</sup> The literature on the shifting attitudes with respect to the body is huge and not always consistent. The classical account is Vigarello's *Le corps redressé*. A somewhat more prudent discussion in the context of fencing culture in Briost *et al.*, *Croiser le fer*.

<sup>14</sup> An excellent general introduction is Hanegraaff, *Western Esotericism*. For the specifics during the Renaissance period: Couliano, *Eros et Magie*. Clear examples of the Renaissance mentality in martial culture are prominent in the Italian and the Spanish School of fencing, like e.g. Camillo Agrippa. See Mondschein, 'The Number of Motion'. A beautiful example for the North-West of Europe (though heavily influenced by the Spanish School) is Gerard Thibault, whose *Académie de l'espée* remains one of the most exquisite fight books ever made. See de la Fontaine Verwey, 'Gerard Thibault'. The standard reference for this period is Anglo, *Martial Arts*.

<sup>15</sup> In addition to the references provided in the rest of the present issue, in particular in Leblanc, in coll. with F. Cinato, "Scholastic Clues in Two Latin Fencing Manuals", see Grossi, *La Seconda scolastica*; Gens, *La logique herméneutique*; Franklin, 'Science by Conceptual Analysis'; and Doig, 'Suárez, Descartes'. On medieval scholasticism, see Weijers, *Le maniement du savoir*.

they rely. Through remedial proposals in a few specific cases, we hope to provide future HEMA researchers with directions and tools to bring their work up to standard on this point and thus make it more accessible and acceptable to the research community in the humanities at large.

## II. ARISTOTELIANISM IN THE ‘SCHOOL’

### II.1. Logic and Method

The importance for and impact of Aristotle on the development of medieval mentality and culture can hardly be overestimated and is a commonplace in the academic humanities. It does matter, however, to explore more in detail what that influence entails in a given context. This is not easy.<sup>16</sup> Often we as researchers remain the victims of a nineteenth century general historiography that drew a drastic dividing line between the ‘erroneous’ pre-modern, clerically promulgated Scholastic worldviews of the ‘Dark’ Middle Ages and our own enlightened, rational, modern scientific worldviews. Even when looked upon more favourably, the apparent weirdness of, e.g., the substance theory in physics or the doctrine of the four humours in medicine, makes it difficult to grasp their real significance, or understand the extent to which still now we are tied by many strings to that past. Whenever we use, say, the word ‘energy’, we are employing a dynamical concept coined by Aristotle. When we require that something be ‘more specific’, this is a typically Peripatetic request. Also, many of the linguistic and epistemological questions we address today were formulated clearly for the first time by some cleric in a medieval university auditorium or monastic scriptorium. Even if it is evidently true that the transition from the Middle Ages to Modernity entailed fundamental conceptual and technological changes, this process was generally very gradual, and in a number of areas hardly, if at all, perceptible until the Industrial Revolution.<sup>17</sup> It is also important to realize that the medieval period itself is a culturally and historically layered hybrid and has a number of internal moments of transition of itself.<sup>18</sup> Furthermore, we tend to systematically misinterpret the Renaissance as merely a precursory addendum to Modernity<sup>19</sup>, while in many respects it differs profoundly from it and remains much closer to the Medieval period; it is in any case a distinctive cultural-historical period of its own.<sup>20</sup> Until the seventeenth century, Scholastic Aristotelianism provided the solid common ground on which university education anywhere in Europe rested<sup>21</sup>, even as modern breakthroughs in physics or medicine made their way through the academic landscape of a thousand-year-old intellectual tradition. Moreover, it had taken more than half a millennium for Aristotelian concepts to prevail completely over other ancient views such as Neoplatonism, which itself had a vigorous resurgence during the Renaissance<sup>22</sup> — a fact that can be traced clearly in many of the

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<sup>16</sup> Marrou, *La connaissance historique*.

<sup>17</sup> Cultural transitions can, while post factum easily identifiable, take centuries to unfold. They also tend to not go by the same pace in every walk of life. The introduction of the perspective viewpoint in painting and architecture (codified by Leon Battista Alberti in his 1435 book *De pictura*), or the conception of the living body as a machine rather than as an organo-physiological entity animated by a soul are but a few examples. For perspective, see, e.g., Montebelli, ‘Luca Pacioli and perspective’. For the body, see ft.11.

<sup>18</sup> Wickham, ‘Historical Transitions’.

<sup>19</sup> Toulmin, *Cosmopolis*, especially chapter one.

<sup>20</sup> The difficulty is evident in two influential studies on the Renaissance scholar Giordano Bruno, each correct on its own terms in its own domain yet contradicting each other: Yates, *Giordano Bruno and the Hermetic Tradition*, and Gatti, *Giordano Bruno and Renaissance Science*.

<sup>21</sup> Blum, *Modern Aristotelianism*. See also Leijenhorst, Lüthy and Thijssen (eds), *Aristotelian natural philosophy*; Schmitt, *Aristotle and the Renaissance*.

<sup>22</sup> Couliano, *Eros et Magie*. See also Allen, *Studies in Platonism*.

fencing manuals of the period.<sup>23</sup> All this is of particular relevance for a correct understanding of how the medieval reception of and elaboration on scientific and philosophical Aristotelian concepts and sources exerted its effects on the authors we study.

As far as we know, the fight book literature starts early in the fourteenth century<sup>24</sup> — with roots that go probably centuries further back, into at least the early High Middle Ages.<sup>25</sup> One should be well aware that until the thirteenth century, classical sources in the original Greek were hardly available in Europe, except for Sicily (which belonged to the Byzantine Empire before it became an Islamic kingdom<sup>26</sup>), and - curiously - Ireland.<sup>27</sup> Knowledge of a limited number of Aristotle's works was preserved throughout Europe in translations made originally by mainly two Roman scholars, Boethius and Cassiodorus, who served as advisors and diplomats to Theoric, king of the Ostrogoths, at the beginning of the sixth century.<sup>28</sup> They both deliberately set out to translate, comment and transcribe as much as possible of the ancient literature before it would be lost forever.<sup>29</sup> Especially Boethius's translation of large parts of Aristotle's early logical works (*De Interpretatione*, *Categories*, *Prior Analytics*), on ancient argumentation theory and rhetoric (Aristotle's and Cicero's *Topics*), as well as his commentaries on Neoplatonic mathematics (*De institutione arithmetica*<sup>30</sup>) and theology (*Opuscula sacra*), proved impactful during the ensuing millennium.<sup>31</sup> During the so-called Carolingian Renaissance (8-9<sup>th</sup> century), using this literature, the foundation of court and cathedral schools was laid in North-West Europe.<sup>32</sup> Through a focus on logic and linguistic methods (study of Latin, interpretation of (Biblical) texts) and didactic concerns manifest in the establishment of the curriculum of the *trivium* and *quadrivium* (the seven liberal arts), these schools will develop from the twelfth century onwards into the basis of what we now call universities, independent guild-like institutions for learning and research who received formal recognition by authorities that warranted their control on their own education and examination.<sup>33</sup> On the knowledge acquired on the liberal arts level, the three 'higher faculties' (Medicine, Law

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<sup>23</sup> The combination of Aristotelian concepts of motion and Neoplatonic symbolic geometry to convey insight in the principles that govern fencing as a science is typical of sixteenth and seventeenth century especially in Italy, France and Spain. For an overview, see Anglo, *Martial Arts*, pp. 61-90.

<sup>24</sup> Bodemer, *Das Fechtbuch*.

<sup>25</sup> The oldest fight book we have is the aforementioned Walpurgis manuscript (Royal Armouries Ms. I.33), deals with (short) sword and buckler, and dates back to around 1300 AD. For a critical edition, see Cinato & Surprenant, *Le livre de l'art de combat*. The first textual witness to the German longsword tradition we have, the Pol Hausbuch or Pseudo-Döbringer (GNM 3227a), states at the start of the gloss to the *Zedel* explicitly that the art 'was discovered and developed hundreds of years ago'. For an edition of the version of the *Zedel* in pseudo-Döbringer, Verelst, 'Labyrinth'. For a translation of the longsword gloss, Chidester, *Long Sword Gloss*, p. 31 sq. Note that we speak here about martial art as the development and practice of individual combat skills. With respect to what we might now call 'war engineering', there are a few older sources, like Villard de Honnecourt (1260) and Guido de Vigevano (1340); see Kleinau, 'Engineers and masters of warfare'. With respect to large scale military strategy, Vegetius's fourth century classic *De re militari* remained popular throughout the Middle Ages. Byzantium contributed Emperor Maurice's *Strategikon*, in which the link between warfare and hunting is made explicitly (which will prove relevant in what follows). Petersen, 'The *Strategikon*'.

<sup>26</sup> Metcalf, *Muslims of Medieval Italy*.

<sup>27</sup> Graham, 'Irish Monks'; Moran, 'Greek in Early Medieval Ireland'.

<sup>28</sup> Marenbon, *Boethius*.

<sup>29</sup> Buellens, *The Friar and the Philosopher*, pp. 20-23.

<sup>30</sup> Mostly a translation of Nicomachus *Arithmetica*. His translations of Euclid and Ptolemy did not survive. Masi, 'The Liberal Arts and Gerardus Ruffus'.

<sup>31</sup> Boethius's own treatise (written in prison), *On the Consolation of philosophy* was a philosophical bestseller from late Antiquity up to early Renaissance. It exerted considerable influence on heads of state and intellectuals alike, and was translated in the vernacular by Alfred the Great, Geoffrey Chaucer and Queen Elisabeth I, to name only the English ones. Phillips, 'The English "Consolation of Philosophy"'.

<sup>32</sup> Colish, *Medieval Foundations*, pp. 66-79.

<sup>33</sup> I follow in this McVaugh, 'Galen in the Medieval Universities, 1200-1400', pp. 382-383. See also Marenbon, *Later Medieval Philosophy*, pp. 7-26.

and Theology) rests. The knowledge from these institutions seeped through again to the vernacular level through lower clergy or through medical and legal practitioners in touch with laymen and the common, such as craftsmen practicing practical trades. Which brings us again to the martial arts.

For the field of HEMA Studies, it is relevant to know what the precise intellectual and practical status of martial arts was among the other professional arts of their time. This is important because our understanding of their place in the social fabric will help us understand more precisely the socio-economical and cultural situation of their practitioners in the societies in which they thrived. Medieval thinkers attached themselves much importance to questions related to the status of such 'artistic' activities, as can be inferred from the fact that there were recurrent intellectual and legal debates on this topic.<sup>34</sup>

It shall be clear that 'art' is to be taken here in its pre-Romantic sense of a body of knowledge and practices transmittable through apprenticeship.<sup>35</sup> It occupies the middle ground between what we to-day would call "science" and "art", and comes close to the idea of "craft". Evidently, industrialised warfare made such conceptions largely obsolete. It is also crucial to be aware of the fact that education in these arts, whatever their nature, was largely personal and passed primarily through the medium of the spoken word.<sup>36</sup> This was also the case for the intellectual arts thought at university; even when the discipline was theoretical and centered on texts, they were to be read aloud and discussed.<sup>37</sup> Relevant to our subject is also that a practice of logically structured public debate developed, the *disputatio*<sup>38</sup>, which in many respects resembled a duel, and was often compared to it.<sup>39</sup> Again, we can trace its origins to Boethius<sup>40</sup>: he saw the early Aristotelian logical works — the "old logic" — as the basis for *quaestio*, a method of finding the truth about a given subject-matter in which opposing positions with regard to a topic or problem related to it are developed, and ultimately brought to a conclusion in favour of either of them. The method will be systematised and developed to great refinement by famous theologians of the twelfth century, like Peter Abelard in his *Sic et Non* and in Peter Lombards' *Sentences* (around 1150).<sup>41</sup> Lombard, teacher at the cathedral school of Paris, takes the step of bringing commentaries from authorities on a given doctrinal topic together in an orderly fashion, so that it becomes clear who contradicts whom on what subject, and which questions (*quaestiones*) and arguments in favour or against can be developed and/or refuted about the matter at hand. This method goes with a specific technical vocabulary for structuring the arguments in a debate<sup>42</sup>, and will remain for centuries the standard for *inventio* (discovery of new truths) in scientific research at the universities of the time.

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<sup>34</sup> For an example relevant to HEMA Studies, the *Eisenacher Rechtsbuch*, see Bauer, 'Zedel Fechter'.

<sup>35</sup> Verelst *et al.*, "Introduction", in D. Jaquet *et al.*, *Fight Books*.

<sup>36</sup> See on this problem with respect to martial art Müller, 'Bild—Vers—Prosakommentar'.

<sup>37</sup> 'It is now commonly accepted that the European Middle Ages were "oral," insofar as writing was dictated and reading was carried out viva voce. The term for writing as a method of composition was *dictare*, whereas *scribere* generally only referred to the physical act of putting pen to parchment (...) *Legere*, as late of the fifteenth century, normally entailed an oral articulation of the sounds being decoded.' Fleischmann, 'Linguistics, and the discourse of the Medieval Text', p. 20.

<sup>38</sup> Hoye, 'Die mittelalterliche Methode der Quaestio'. The reference work on the subject is Grabmann, *Die Geschichte der scholastischen Methode*. For an accessible introduction, Marenbon, *Later Medieval Philosophy*, pp. 27-33. See also the references in Bas, 'The arts of fighting and of scholastic dispute', in the present issue, and Schönberger, *Was ist Scholastik?*, p. 52-79.

<sup>39</sup> For more on this topic, see the article of P.-H. Bas, in the present volume.

<sup>40</sup> Buellens, *The Friar and the Philosopher*, pp. 22-23.

<sup>41</sup> Marenbon, *Later Medieval Philosophy*, pp. 11-12.

<sup>42</sup> Cinato and Surprenant rightly point out in their I.33 edition that the presence of such elements of technical vocabulary (*patet* or *notandum est*) indicate clearly the intellectual university milieu from which the composers of the Royal Armouries MS. I.33 stem. *L'Art du combat*, pp. xxxvi-xxxvii.

Over the next centuries, further developments of this technical apparatus emerge after the rediscovery of Aristotle's *Posterior Analytics*, stimulating a movement toward greater systematisation of knowledge, so typical of the great metaphysical and theological *Summae* of the fourteenth century, and continuing into early Modernity.<sup>43</sup>

## II.2 Liberal and Mechanical Arts

The idea of a scholarly curriculum of four 'theoretical' sciences<sup>44</sup> — music, geometry, astronomy, arithmetic — themselves again founded on a smaller curriculum of three preparatory disciplines — grammar, logic/dialectic and rhetoric —, goes back to Neoplatonic circles in late antiquity. Augustine, in his *De ordine*, was the first to give the series its canonical form.<sup>45</sup> Somewhat later it reappears in a curious didactic allegory by Martianus Capella<sup>46</sup>, *De Nuptiis Philologiae et Mercurii*, or *De septem disciplinis* in the early fifth century. Its obscure content notwithstanding, this book became a school manual from the sixth century onwards, was eagerly copied and commented<sup>47</sup>, and remained popular until at least the eleventh century AD. Boethius will also take up the idea. It is handed down into the medieval tradition via successors of the scholars in Charlemagne's palace school, of which the most formidable was John Scotus Eriugena. He introduced the term *artes mechanicae*, but never gave a full list.<sup>48</sup> He posits the idea of a parallelism, not a hierarchy, between the two categories, but describes the liberal arts nevertheless as 'divine', and the mechanical arts as 'human'.<sup>49</sup> Another interesting difference is that the liberal arts are 'understood naturally in the soul' while the mechanical arts are acquired by 'some imitation or human devising' — you need to learn them by practice, not by fundamental intellectual intuition, as is the case with the first principles that underlie any theoretical science (and any 'art' *per se*) in the Aristotelian sense.

The discussion was picked up again by Hugh of Saint Victor in the early twelfth century, who gave the notion of *artes mechanicae* its canonical form, and through whom it will contribute to the establishment of early scholasticism: Hugh wrote a standard handbook on the division of philosophy<sup>50</sup> (i.e., knowledge in general) and the organization of higher studies that would remain influential for centuries to come: the *Didascalicon*.<sup>51</sup>

Hugh's first concern is what to read. Mindful, like Augustine, that wisdom is the goal of education, Hugh classifies all learning under the heading of Philosophy, using, as Jerome Taylor notes (1961, p. 8), an Aristotelian four-fold division containing all the arts (by which Hugh means a form of knowledge comprised of rules and precepts). His scheme is as follows: 1) theoretical: theology (contemplation of God and spiritual substances),

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<sup>43</sup> Marenbon, *Later Medieval Philosophy*, p. 116 sq. See also, in general, Weijers, *In Search of the Truth*.

<sup>44</sup> Wagner, *The Seven Liberal Arts*.

<sup>45</sup> Hadot, *Arts libéraux et philosophie*, chapter III.

<sup>46</sup> Stahl *et al.*, *Martianus Capella and the seven liberal arts*.

<sup>47</sup> Winterbottom, 'Martianus Capella', p. 245.

<sup>48</sup> Confusingly enough not a Scottish but an Irish scholar, of around 850 AD. He went to France where he enjoyed the patronage of Charles the Bald, and probably stayed there for the rest of his life. He wrote extensively on logic, natural philosophy and theology. He was among the few of his contemporaries who could read Greek, although his textual sources were entirely Patristic. His theology was of Neoplatonic tendency. For his intellectual biography, see Marenbon, *Early Medieval Philosophy*, pp. 55-70. For his theology, Trouillard, 'La "Virtus Gnostica" selon Jean Scot Érigène', pp. 331-354.

<sup>49</sup> The only example he mentions explicitly is, interestingly, architecture. Whitney, 'Paradise Restored', pp. 70-71.

<sup>50</sup> "The "Quaternary" of the Arts. The first book of the *Didascalion* provides a carefully articulated demonstration that philosophy must comprise four, and only four, master-categories of arts and disciplines—theoretical, practical, mechanical, and logical." Taylor, *The Didascalion*, pp. 7-8.

<sup>51</sup> For the original text of the *Didascalion*, see 'Didascalicon', in J.P. Migne, *Patrologia Latina*, Tomus CLXXVI, Col. 739-812.

physics (natural philosophy) and mathematics (the quadrivium of arithmetic, music, geometry and astronomy); 2) practical: solitary (ethics), private (household economics), and public (civil); 3) logical: the trivium (grammar, dialectics and rhetoric); and 4) mechanical: containing seven arts, including agriculture, medicine and hunting.<sup>52</sup>

The mentioning of medicine in this list will prove to be relevant in what follows. Hugh's complete list contains the following items: fabric-making, armament construction, navigation, agriculture, hunting, medicine, theatrics.<sup>53</sup> Interestingly, the combat arts fall under the latter category, which he describes as the 'scientia ludorum a teatro quo populus ad ludendum convenire solebat'<sup>54</sup> — the science of the games in an open space where people are used to come to play. He presents fighting as a game, of course not in the modern sense of merely a passtime entertainment, but in the sense of a (especially for the spectators) joyful, but meaningful practice, regulated and set in a specific perk or space (or 'court', German *Hof*), often with a didactic goal.<sup>55</sup> This playful nature does not exclude a potentially mortal outcome at all, as we know from tournament fighting and judicial combat.<sup>56</sup> The use of the term 'zogho' in the early Italian fight books confirms this interpretation.<sup>57</sup> 'Armatura' concerns the construction of (protective) equipment (strengthened by the addition of the qualification 'fabrili' in the explanation in the text), from buildings to shields and armour, but it has nothing to do with the handling of weapons as such, contrary to an interpretation that one sometimes finds in recent HEMA literature.<sup>58</sup> The art of *armatura* concerns those who make equipment that protects or shores up. Hugh of St. Victor's own clear words on this are confirmed by a book written three centuries later, in Rome to be precise, and which soon made its way in German translation up into the north: Rodrigo Sanchez de Arévalo's *Speculum Vitae Humanae* (1468), translated by Heinrich Steinhöwel as the *Spiegel des menschlichen Lebens* (1476).<sup>59</sup> The moral treatise, close to the genre of the *Fürstenspiegel*, contains a lengthy chapter on 'den hantwercken', the handicrafts. There we find back, under repeated references to Aristotle, basically Hugh of St. Victor's *artes mechanicae* list. With Rodericus, the second art (*armatura*) is 'schmidwerck und zimmerwerck'<sup>60</sup>, which he

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<sup>52</sup> Fitzgerald, 'Medieval Theories of Education', pp. 575-588.

<sup>53</sup> 'Mechanica septem scientias continet: Lanifficium, armaturam, navigationem, agriculturam, venationem, medicinam, theatricam'. St. Victor, 'Eruditiones Didascalicae', *Patrologia Migne*, vol. 176, col. 760. The list tends to vary somewhat depending on the author, e.g., commerce instead of navigation, and cooking instead of medicine. These are only superficial modifications, since navigation is the craft that enables commerce, and 'medicine' in this context means mainly the preparation of medical potions and herbal concoctions. The same holds for 'armatura' instead of 'architectura': both concern the construction of things. Finally, 'theatrica' can be replaced by 'militia' joined to 'venatoria' ('warfare and hunting'). That they encompass a similar underlying idea is clear from the fact that even in modern English the name for wild animals to be hunted is still 'game'.

<sup>54</sup> St. Victor, *PL* 176, col. 762-763.

<sup>55</sup> As explained by Dutch historian J. Huizinga in his remarkable 1938 study *Homo Ludens*. Cfr. Verelst et al., 'Introduction', in Jaquet *et al.*, *Fight Books*, pp. 21-22.

<sup>56</sup> Jaquet, 'Six Weeks to Prepare for Combat'.

<sup>57</sup> Rubboli and Cesari, *Fiore Dei Liberi*.

<sup>58</sup> Contra J. Acutt, in his recent book *Swords, Science and Society*, pp. 65-66. The fact that e.g. the title of Talhoffer's MS Thott.290.2<sup>o</sup> refers to 'alte Armatura und Ringkunst' does not make a difference, because obviously, there is a lot of *armatura* related material in it (the Bellifortis material). Moreover, 'Ring' does clearly not refer just to the activity of wrestling, but to the demarcated perk in which such activities took place. The title thus encompasses the core elements of the 'Wissenssystem' embodied by the specific genre of the fight book *Hausbuch*. For more on this, see section IV below. To the confusion might have contributed the unlucky German translation 'Kriegswesen' in Bauer, *Zedelfechter*, p. 304. But Bauer immediately adds that 'Die Fechtlehren gehören innerhalb der artes mechanicae zu den Hofkünsten (theatrica) und auffälligerweise nicht zum Kriegswesen (armatura)' — which is entirely correct.

<sup>59</sup> The copy I consulted is in the University Library of Heidelberg, and can be consulted under this link: <https://digi.ub.uni-heidelberg.de/diglit/ir00231000> Arévalo was bishop of Zamora, hence he is also known as Rodericus Zamorensis. For more information, see Kurze, 'Lob und Tadel der artes mechanicae'.

<sup>60</sup> p. 148 in the modern pagination.

specifies a bit further as, ‘waffenschmid, goldschmid, kannntengiesser (...) muntzmeyster, steinmetz, mauerer, zimmerleut, schreyner (...)’. A beautifully coloured illustration shows the blacksmith at work in his forge. The sixth craft is the ‘fechten handwerck’. Rodericus adds, ‘Theatrica, das is freudenspil genennet’. In his comment, he refers again to Aristotle, but paraphrases Hugh<sup>61</sup>: ‘Dese kunst – Theatrica — is von den wort theatrum also genennet. Und theatrum ist die statt gewesen wohin sich das volk samnet die freudenspil zu sehen’ (This art — theatrica — is derived from the word theatrum. And Theatre was the place where people met to see the joyful play)”.<sup>62</sup> The illustration that follows could have come straight out of a fifteenth-century fight book. This supports the evidence Bauer put forward in his article.<sup>63</sup>



Fig 1: *Artes armaturae*. From Rodericus Zamorensis *Spiegel des menschlichen lebens* © Universitätsbibliothek Heidelberg [GW M38511, 60v]

Here, in line with Mary Carruthers’s studies on the medieval arts of memory, it is worth noting that in general, the mechanical arts do not concern only activities that are ‘productive’ as opposed to those which are not. The idea that the works of the mind would be “unproductive” because they are ‘immaterial’ is a typically modern, utterly non-medieval way of looking at them. For the medievals, the mind is a machine as much as a physical tool is, all be it one of a different nature: it operates and has to be practiced through the soul, not through the human body. It would be absurd to claim that, e.g., a book does not exist as a real product only because the owner is carrying it around in his or her memory, and not as a physical object.<sup>64</sup> However, mechanical arts constitute a group of activities which imply a specific kind of knowledge acquired in a particular

<sup>61</sup> Kurze, *artes mechanicae*, p. 123.

<sup>62</sup> That is, ‘joyful’ in the first place for the spectators. We should not forget that a public hanging would take place in a ‘court’ as well, to the delight of the massively present public. For the quote, see p. 160 in the modern pagination.

<sup>63</sup> Bauer, *Zedelfechter*, pp. 303-304.

<sup>64</sup> Carruthers, *The Book of Memory*.

way. These activities engaged both the body and the mind — a process in which emblematic cognitive picturing plays an essential role<sup>65</sup> — and had to be acquired under the guidance of a master. As such they occupy a central place in the imagination and pedagogy of medieval intellectual culture, especially in the period up to the thirteenth century.<sup>66</sup>

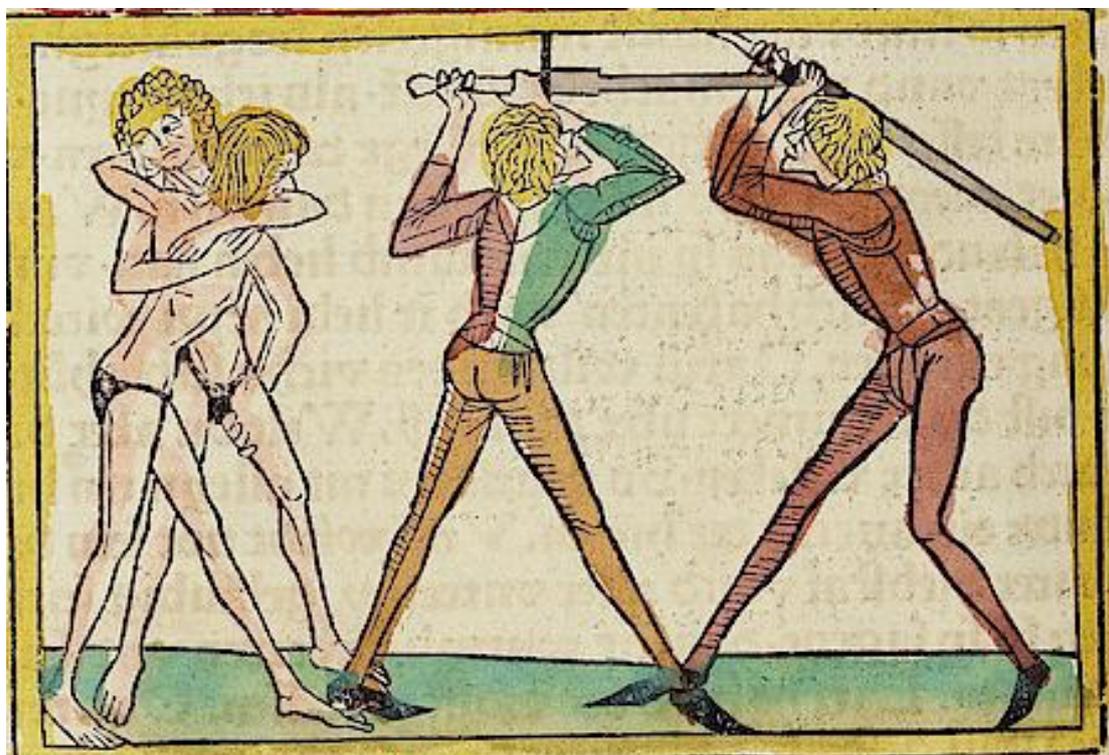


Fig 2: *Artes Theatricalae*. From Rodericus Zamorensis *Spiegel des menschlichen lebens* © Universitätsbibliothek Heidelberg [GW M38511, 66v]

To end this section, a few words on a third category of arts, the *artes incertae*, or ‘uncertain arts’, i.e., those for which — as their name indicates — the precise operation and the possible outcomes of their operation are uncertain. The group includes disciplines like natural magic, divination, chiromancy and astrology. The latter discipline shares with medicine the characteristic that it was recognised as both a practical and a theoretical art, and was therefore a part of the university discipline of astronomy and a ‘common’ art simultaneously.<sup>67</sup> These arts typically concerned issues like the determination of the ‘right moment’ to do something or other ways to ‘enhance’ the outcome of a process or activity.<sup>68</sup> The Church looked down on these arts with great distrust and their practice could be dangerous, but it was nevertheless widespread. Astrology in particular enjoyed an enduring popularity, and was studied and practised by physicians who used this art to determine the right time for their treatments and to increase their chances of success.<sup>69</sup> Astrology was also of great importance in the legal world, for example for establishing the correct and favourable calendar for hearings. Already in the eleventh century, John of Seville (Johannes Hispalensis) of the notorious Toledo School of Translators (to which

<sup>65</sup> Carruthers, *The Craft of Thought*, p. 2.

<sup>66</sup> The point is made forcefully by Burgon in her brilliant dissertation: *The Mechanical Arts and Poiesis*.

<sup>67</sup> Lemay, ‘The teaching of astronomy in medieval universities’.

<sup>68</sup> Kieckhefer, *Magic in the Middle Ages*, pp; 1-2.

<sup>69</sup> Weisser, ‘Iatromathematik’, pp. 652-655.

we will come back below), translated Arab astrological treatises based on Ptolemy into Latin.<sup>70</sup> In the background of these practices, the ancient idea of the relationship between the microcosmos and the macrocosmos continues to play a persistent role. Interestingly, this same John of Seville also translated the *Secretum secretorum*, a pseudo-Aristotelian Arab work containing Aristotle's supposed advice to his pupil Alexander, which would become the model for the later genre of the *Fürstenspiegel*, and which will also play a role in what comes next.<sup>71</sup>

### II.3 Old and New Scholastic Logic

We are now arriving at the point where the Arab influence clearly begins to permeate the Christian West. The important point here from the HEMA perspective is the confluence of interest in natural philosophy, logic and medicine among the greatest of the Arab scholars (Avicenna, Rhazes, Averroes), and the way they shape the reform of the European university curricula from the thirteenth up to the fifteenth century, but also their lasting influence on literate vernacular culture. Moreover, it makes in any case sense to finish the story at least in its outline, so that HEMA scholars can situate their topic of interest within the broader historical picture. Keep in mind that the developments we have been outlining so far all take place long before the first fight books see the light of day. But we will also see that this does hardly matter, because sources working on each other can be separated by centuries and connected by an intricate web of transmissions, so as to be hardly recognisable at the receiving side.

We saw before that Boethius's compendium of and commentary upon the logical works of Aristotle (except for the *Posterior Analytics*) laid out the methodological basis of the early period of the School, the so-called *logica vetus*, the 'old logic'. From the twelfth century onwards, major Aristotelian texts and commentaries by Arab philosophers become available in Latin translations based on Arab sources, made in the Spanish city of Toledo by scholars like Gerard of Cremona, who translated Aristotle's *Posterior Analytics*, *Physics* and *De caelo* from the Arabic, as well as important medical works: Ibn Sina's (Avicenna) *Canon of Medicine* and Al-Razi's (Rhazes) *Liber ad Almansorem*. Half a century later, around 1220, the key figure is Michael Scotus, to whom are attributed translations of Aristotle's *De anima*, *De Caelo*, *De generatione et corruptione* as well as two great commentaries on Aristotle's *Physics* and *Metaphysics* by the extremely influential late twelfth century Arab scholar Ibn Rusd (Averroes, 'The Commentator').<sup>72</sup> Toledo had been a part of Al-Andalus, the Muslim-ruled part of the Iberian peninsula, and continued to be a cultural hotspot and home to a very influential school of translators, where Christian, Jewish and Muslim scholars and scientists not only encountered each other, but also actively cooperated in the sharing of knowledge on different disciplines.<sup>73</sup> Avicenna in particular had a profound influence on both philosophy and medicine. From the second half of the thirteenth century onwards Latin translations of all Aristotle's major works from the original Greek become available, mainly through the efforts of two men: the English theologian and Bishop of Lincoln Robert Grosseteste and the Flemish Dominican friar William of Moerbeke, stationed in Greece as Archbishop of Corinth for many years. On request of Thomas Aquinas, Moerbeke translated several major works of Aristotle into Latin directly from the Greek, and revised existing translations.<sup>74</sup> Aquinas used mostly his translations while writing his great philosophical and

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<sup>70</sup> Burnett, *Abū Mas'bar on Historical Astrology*. For a specifically legally oriented text (*Liber introductorii maioris ad scientiam iudiciorum astrorum*), see Lemay, *Kitāb al-madkhal al-Khabīr. Introductorium maius in astrologiam*.

<sup>71</sup> Brinkmann, *Die apocryphen Gesundheitsregeln des Aristoteles*.

<sup>72</sup> Schmieja, *Secundum aliam translationem*, pp. 316-338.

<sup>73</sup> Arráez-Aybar *et al.*, 'Toledo School of Translators', pp. 21-33.

<sup>74</sup> Buellens, *The Friar and the Philosopher*, pp. 47-48.

theological *Summae* even though, as we saw, the text corpus of the *logica vetus* based on Boethius's works continued to be used as well. Supported by Aquinas's authority, Moerbeke's translations became a key factor in the renewal of the university curriculum in Paris and elsewhere in Europe.<sup>75</sup> But the 'old logic' did not disappear. The 'new logic', starting from the idea advanced in the *Posterior Analytics* that knowledge can be organised in a *system* based on first principles accessible to intuition,<sup>76</sup> will integrate the techniques of the 'old logic' and use them to expand to other fields of knowledge like natural philosophy and metaphysics, but also to more practical arts like medicine.<sup>77</sup>

### III. THE ARISTOTELIAN TRADITION IN MEDICAL LITERATURE AND PRACTICE

It is indeed no coincidence that during about the same period as the one we discussed before (fifth-eleventh century AD), another process of transmission of ancient knowledge, this time not with respect to logic, but with respect to medicine and systematic philosophy took place in Southern Europe, following a different road through the Middle East. Aristotle's *Posterior Analytics* and his key metaphysical works, as well as the medical literature based on his natural philosophy, had been studied jointly for centuries by famous Arab scholars and their works started to find their way into the West. By the twelfth century, the interest in medicine paved the way for the great Arab philosophers to slowly gain more widespread currency in Europe's university curricula,<sup>78</sup> and also in more practical, vernacular literature, a fact relevant to HEMA-related *artes*-literature, as we will see. The Aristotelian approach to medicine is epitomised in the works of Galen<sup>79</sup>, who merged Aristotle's natural philosophy with the Hippocratic bodily humours theory<sup>80</sup> and his theory of temperaments.<sup>81</sup> Galen wrote an enormous number of books with empirical observations on nearly everything medical from that point of view.<sup>82</sup> His teachings, along with a host of empirical observations, have been compiled in a famous medical syllabus called *Tegni* which was used in medical schools in sixth-century Alexandria and would remain influential for centuries.<sup>83</sup> When the city fell to the Arab armies in 642, it travelled via Syria<sup>84</sup> to Bagdad, but also to Italy, where some early Latin commentaries and practical compendia on Galenic medicine were preserved. Aristotle and Galen would come back to Europe completely in Arab translation following the reverse road four centuries later, and

<sup>75</sup> For a detailed chronology of Thomas's works and their relation to Moerbeke's translations, see Torrell, *Initiation à saint Thomas d'Aquin*.

<sup>76</sup> McKirahan, *Principles and Proofs: Aristotle's theory of demonstrative science*.

<sup>77</sup> Marenbon, *Later Medieval Philosophy*, pp. 47-49.

<sup>78</sup> McVaugh, 'Galen in the Medieval Universities, 1200-1400'.

<sup>79</sup> Hankinson, 'The Man and his Work'.

<sup>80</sup> The four humours blood, phlegm, yellow bile and black bile should be in balance (*eucrasia*) in order for the body and the mind to be healthy. This is why the diet, the *regimen sanitatis*, plays such an important role in medieval medicine. This theory is explained in the Hippocratic *On the Nature of Man*, to which Galen wrote a commentary. Kalachanis & Michailidis, 'The Hippocratic View on Humours', pp 1-5; Keil: *Humoralpathologie*, pp. 641–643; Bergdolt, Keil: *Humoralpathologie*, pp. 211–213.

<sup>81</sup> Schmidt: *Temperamentenlehre (Neuzeit)*, pp. 1382-1383.

<sup>82</sup> He wrote a.o. *On the Elements, On temperaments, On Anatomy, On Therapeutics, On the uses of the parts of the body, On the causes of respiration, On the pulse, On Remedies, On the composition of drugs*, etc., He also wrote commentaries on the major works of Aristotle and Hippocrates. For an overview of his most important medical works, 'Selected works of Galen', translated by Montraville Green. For a full biography of the extant corpus: Kotrc and Walters, 'A bibliography of the Galenic Corpus', pp. 256-304.

<sup>83</sup> 'Tegni' is the Latin rendering of a Hellenic pronunciation of classical 'Technē' (τεχνή), art, technique, practical knowledge.

<sup>84</sup> Watt, *The Aristotelian Tradition in Syriac*.

accompanied by a number of top-quality works produced by Arab and Persian physicians and philosophers, like Rhazes, Avicenna, and Averroes.<sup>85</sup>

The oldest medical school in the proper sense of that word in Europe was the School of Salerno (*Schola medica Salernitana*), which originated in the beginning of the ninth century in the South Italian city that goes by the same name.<sup>86</sup> The school started likely in a local monastery, but rose quickly to fame, attracting many students from Europe and the Middle East. Apart from its excellent reputation with respect to medical practice and empirical approach, the main reason was the systematic translation effort of Greek<sup>87</sup> and Arabic versions of lost works of Hippocrates, Galen and Dioscorides.<sup>88</sup> Sources in both Greek and Arabic would have been more easily available there than elsewhere in Europe, given the nearness of not only Alexandria, but also of Sicily, which used to be part of the Byzantine Empire, but was between the ninth and the eleventh century an Islamic kingdom, before it was conquered by the Normans. Interestingly, the school, which continued to exist until the eighteenth century, admitted women, of whom some rose to fame both as practising physicians and as medical scholars.<sup>89</sup>

The arrival of Constantinus Africanus (+ 1098), a monk from Tunis with a number of Arab books in his luggage, in Salerno during the eleventh century, gave a big boost to the school. He composed the *Liber Pantegni* (□□□□□□□□, “the Book of complete (medical) techniques”)<sup>90</sup>, a huge compendium of fragments of Greek and Arab medical texts, of which Galen’s *tegni* and the *Kitab-al-maliki* (*Liber Regalis* or Royal Book) by the Arab physician Ali ibn al-Abbas al-Majusi (Hali Abbas) were the key parts. This book, a famous and widespread work of which many manuscripts survive, was part of the so-called old *ars medicinae*, a collection of seven texts that build up the medical curriculum at European schools and universities from the tenth till the first half of the thirteenth century.<sup>91</sup> This book will come back in what follows, because it is explicitly mentioned in Talhoffer’s Thott Ms. 292 n2, a case I shall discuss in detail below. It is no coincidence that Toledo in Spain played again such a crucial role over the next two centuries, since it was European territory under Arab rule at a time when the Islamic world was experiencing a cultural boom and Arab rulers were pursuing tolerant policies towards their Christian and Jewish subjects.<sup>92</sup> A century later, the already mentioned Gerard of Cremona (+ 1187), another a member of the Toledo School of Translators, was responsible for numerous new translations from Arabic into Latin during the twelfth century, among which a new version of Galen’s *Tegni*, Avicenna’s *Canon of Medicine* and Rhazes’s *Liber ad Almansorem*. To the latter work we find again a reference in the already mentioned Talhoffer Thott manuscript.

During the fourteenth and fifteenth century, this high level academic literature started to spread outside the confines of universities and penetrate the realm of the traditional vernacular

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<sup>85</sup> Campbell, *Arabian Medicine and its Influence on the Middle Ages*; Bourras-Vallianatos and B. Zipser, *Brill’s Companion to the Reception of Galen*, especially Part II.

<sup>86</sup> Buellens, *Friar and Philosopher*, section: *Aristotle in the ‘School’ of Salerno*, pp. 34-35.

<sup>87</sup> Jacquart, ‘Aristotelian Thought in Salerno’.

<sup>88</sup> Kristeller, ‘The School of Salerno’, pp. 138–194.

<sup>89</sup> They are known as *mulieres Salernitanae*, the women of Salerno. The most famous of them was Trota of Salerno (twelfth century), the world’s first known gynaecologist. They were erased from editorial history from the sixteenth century onwards. Green, ‘In search of an “Authentic” women’s medicine’, pp. 25–54. See also Green, ‘The Development of the *Trotula*’.

<sup>90</sup> Burnett and Jacquart, ‘The *Pantegni* and Related Texts’, pp. 121-160.

<sup>91</sup> McVaugh, ‘Galen in the Medieval Universities’, p. 382.

<sup>92</sup> Tschanz, ‘The Arab Roots of European Medicine’.

medicinal literature of herbals and *Arzneibücher*.<sup>93</sup> The German *Handschriftencensus* lists literally hundreds of medical manuscripts<sup>94</sup> from the early Middle Ages onwards, ranging from herbal treatments and preparations going back to local oral traditions as well as to works on diagnostics and surgery clearly influenced by classical sources. Remarkably, a German compendium with treatments ascribed to the School of Salerno has survived in more than ten copies.<sup>95</sup> Another busy crossroad between learned sources of ancient origin and vernacular literature are the many varieties of 'iatromathematics', basically astrology employed for medical reasons. Galen's theory of elements and temperaments was merged with a fourfold scheme of planetary influences and bodily relationships based on Ptolemy's celestial mechanics.<sup>96</sup> No physician or surgeon worthy of the name would simply disregard astrological knowledge needed for determining the right moment for treatment of a disease of a specific organ, or for calculating the moment of its onset.

As early as the mid-13th century, European physicians had an extensive foundation of astrology of ancient, Arabic and Hebrew origin, which had arisen as a result of the various waves of reception and assimilation in ancient and oriental astronomy and astrology. Thus, the doctor could draw conclusions about the causes, therapeutics and prognostics of diseases from the constellation of the stars.<sup>97</sup>

These iatromathematical insights find their way to the public through the literature on the *Planetenkinder*, figurative emblems in which the relationships between stars, organs and moral properties are symbolically represented in highly imaginative visual representations. They allow the practitioner to quickly and efficiently get an idea of the astrological constellation favourable to a planned undertaking, be it in medicine, martial arts or jurisprudence. An intricate web of interconnections and interactions between vernacular and learned sources on this topic thus finds its way into the hands of people who could build up a remarkable level of expertise without necessarily having had access to formal university education. They could even be literate without attending church school or university. Much more people than we are tempted to think could read and write back then, even if they did not possess any books (which were extremely expensive).<sup>98</sup> For many professions a modest level of reading and writing skills, as well as arithmetic, would be expected. Hence the success of the so-called Abacus schools that flourished

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<sup>93</sup> Apart from local, Germanic knowledge, there was a very influential classical source on herbal treatments that never went out of circulation, the *De materia medica*, written by Pedanius Dioscorides in the first century AD. It left its traces even in the vernacular literature and may help understand why medicine was so often connected to cooking and brewing, and hence to alchemy (in a large sense). It also helps understand in what sense medicine might be considered a productive craft in the sense of the *artes mechanicae*. An interesting study highlighting this point from a modern perspective is De Vos, 'European *Materia Medica* in Historical Texts'.

<sup>94</sup> 479 to be exact. <https://www.handschriftencensus.de/search/hss/1/medizin>. Also Eis, *Mittelalterliche Fachliteratur*. And Riecke, *Sprachgeschichte und Medizingeschichte*.

<sup>95</sup> Keil, 'Deutsches salernitanisches Arzneibuch', p. 348. Also Fürbeth, "Das wissenvermittelnde Schrifttum des Mittelalters in deutsche Sprache", p. XXIII. For a list of copies of the mss. known so far, <https://handschriftencensus.de/werke/82>

<sup>96</sup> Weisser, 'Iatromathematik', p. 654.

<sup>97</sup> 'Bereits um die Mitte des 13. Jh. verfügte der europäische Arzt über einen umfangreichen Fundus an Astrologie antiker, arabischer und hebräischer Herkunft, wie er als Folge der verschiedenen Rezeptions- und Assimilationswellen in der antiken und orientalischen Astronomie und Astrologie entstanden war. So konnte der Arzt aus der Konstellation der Gestirne Rückschlüsse auf Ursachen, Therapeutik und Prognostik von Krankheiten ziehen.' Weisser, 'Iatromathematik', p. 653.

<sup>98</sup> An interesting example are the Low Countries. Discussed in De Munck and Symoens, 'Education and Knowledge: Theory and Practice in an Urban Context': '(...) there was a relatively broad base of literate, skilled and educated people in the towns of the Low Countries, but (...) they thought principally in terms of practicality and functionality. Indeed, more recent research has shown that urban culture in the Low Countries was especially receptive both to neo-Latin influences from humanists and to the development of literature and scholarship in the vernacular.' p. 220.

in Italy from the thirteenth century onwards. They provided people who pursued a career in craft or commerce with basic skills in reading and mathematics thought in the vernacular.<sup>99</sup> The wide distribution of professional *artes*-literature in many disciplines and in every possible vernacular language is another telling evidence of this fact. We should not forget that Fiore in the introduction to his *Flor di Battaglia* (Getty Ms.)<sup>100</sup> states explicitly that without books his craft could not be mastered, because it is so vast that nobody could memorise it. The quote is relevant for even more reasons, because Fiore prides himself on being able to read, write (and draw) without being a university master. More than that, he equates his level of expertise with that of a university doctor in one of the higher faculties, for he claims he has comparatively spent as much time on it (40 years!) and read as many books about it as a university lawyer, theologian or physician would:

Also I say that none of my students, especially those mentioned above, have ever had a book about the art of combat, except for Messer Galeazzo da Mantova. Because he said that without books no one can be a good master or a good student in this art. And I, Fiore, confirm it to be true, because this art is so vast that there is no one in the world who has such a big memory to keep in mind the fourth section of this art without books. Though not knowing the fourth section of this art I would not be a Master any more. So that I, Fiore, being able to read and write and draw, and having books about this art and having studied it for 40 years and more, yet I am not a perfectly good master in this art, although I am considered a good and perfect master in the art I mentioned above, by great noblemen who have been my students. And I say that if I had studied for 40 years law and politics and medicine as I studied the art of combat, I would have been doctor in those three subjects.<sup>101</sup>

This fits in a broader context, in which a growing approximation between ‘the world of the mind and the world of practical action’ takes place:

Whereas a number of artists and wealthier or better-trained artisans acquired aspirations to belong to the learned and literate world of the liberal arts, the physical and manual knowledge of the mechanical arts gradually came to be seen as a legitimate form of access to the knowledge of divine creation.<sup>102</sup>

This state of affairs explains why we are confronted with the at first glance paradoxical situation that ‘medicine’ can be listed on the one hand by Hugh of St. Victor as one of the *artes mechanicae*, i.e., one of the ‘lower’ practical crafts, while at the same time it had developed into one of the three ‘Higher faculties’ (together with Law and Theology) in the upcoming university system.

The quantity and variety of medical practitioners in the medieval period was overwhelming; they were literally everywhere, from members of the mendicant orders, to the village blacksmith who would also pull teeth. What might be termed the ‘professional medical establishment’ included a small group of university educated physicians and a much larger group of apprenticeship trained surgeons, barbers and barber-surgeons whose practice was organised by urban craft guilds. These groups began, in the later medieval period, to feel threatened by specialist retailers who were most commonly called apothecaries.<sup>103</sup>

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<sup>99</sup> Grendler, *Schooling in Renaissance Italy: Literacy and Learning*.

<sup>100</sup> Rubboli and Cesari, *Flos Duellatorum*.

<sup>101</sup> Translation by E. Litta and M. Easton (second draft). <http://www.fioredeiliberi.org/getty/>

<sup>102</sup> De Munck- Sjoens, ‘Education and Knowledge’, p. 220.

<sup>103</sup> Booth, ‘Physician, Apothecary, or Surgeon?’.

Therefore, having access to medical handbooks was, certainly from the fourteenth century onwards, neither exceptional, nor in itself an indication of a specific social status.<sup>104</sup> In order to properly understand what we are dealing with when trying to pinpoint the origin of a direct or indirect reference to such a source, we have to take more sociological and contextual data into account. The same is true with respect to other *artes*-literature as well. These arts were often not strictly regulated qua training or even in terms of practice, except in some cases at the local level. There was no guild nor *magister*-title for cooks, engineers or architects, while the number of books written on these subjects is very large. European martial arts, our main focus here, constitutes a special case in this respect: guilds do appear, but they are a rather late development.<sup>105</sup> Their authority moreover remains local, and even in a single territory rarely goes unchallenged. But the widespread availability and use of manuscripts in knowledge transmission confirms the pattern also in this case.

The next huge step in the development of medieval medicine, especially in the universities, takes place from the thirteenth century onwards. It is roughly the same period which saw the rise to prominence and intellectual independence of the university as an institution in its own right, and the appearance of the ‘new logic’ as opposed to the ‘old logic’ as the basis for academic argument and discovery. It started with the ‘great age of Galenic translation’ at the School of Toledo during the twelfth century, when Gerard of Cremona translated Al-Razi’s (Rhazes) tenth century ‘*Kitab al-Mansouri*’ (*Book of Medicine dedicated to Mansur, or Liber ad Almansorem*), dedicated to Rhazes’s patron Abu Salih Al Mansur, the governor of Ray,<sup>106</sup> and Ibn Sina’s (Avicenna) extremely influential ‘*Al-Qanun fi al-Tibb*’ (*Canon of Medicine*) from Arab into Latin. This was followed by a number of translations from Arab and Greek into Latin, both from Galens’ works and from his Arab successors. It took almost a century for these new translations to slowly penetrate the university curricula at Paris, Montpellier and Bologna, where it not so much replaced but complemented the ‘old medicine’ by the ‘new medicine’.<sup>107</sup> Interestingly, both Rhazes and Avicenna also wrote comments on Aristotle’s logical and philosophical works, like the *Analytics*, the *Physics*, the *Metaphysics* and the *De anima*, some of which got translated as well.

This intricate connection between philosophy and medicine goes back to Antiquity and is related to conceptions on the intimate relation between the ‘microcosmos’ and the ‘macrocosmos’<sup>108</sup>: *The Best Physician is Also a Philosopher* is not without reason the title of one of Galen’s own works.<sup>109</sup> In the Arab world this was recognised to the extent that physicians with a serious background in philosophy were designated by a special term, *Hakim*, to distinguish them from mere practitioners.<sup>110</sup> A century later, the aforementioned William of Moerbeke translated several works of Galenus directly from the Greek,<sup>111</sup> which again found their way into the renewed university curriculum, so that we can say that at the apex of High Medieval university Scholasticism, the two fundamental pathways along which Aristotle’s influence had worked its way over the past millenium, philosophy and medicine, finally came together again to form the bottom rock of what would become the standard for intellectual life in the West for the next four

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<sup>104</sup> De Munck & Symoens, “learning while doing” does not rule out the fact that there were handwritten sets of instructions in the vernacular circulating in the day-to-day practice of, for example, medicine.’ *Education and Knowledge*, p. 223.

<sup>105</sup> Gevaert & van Noort, ‘Evolution of Martial Tradition in the Low Countries’, pp. 376-410.

<sup>106</sup> Hence the Latin Title. A copy of *The Book of Medicine Dedicated to Mansur and Other Medical Tracts* is kept at the Library of Congress.

<sup>107</sup> McVaugh, ‘Galen in the Medieval Universities’, pp. 382-386.

<sup>108</sup> Weisser, ‘Iatromathematik’, p. 653.

<sup>109</sup> Drizis, ‘Medical Ethics in a writing of Galen’, pp. 333-6.

<sup>110</sup> Gerabek *et al.*, ‘Philosophie und Medizin’, p. 1151.

<sup>111</sup> McVaugh, ‘Galen in the Medieval Universities’, p. 387.

centuries, and what we consider today as ‘scholasticism’ per se. The history of Scholasticism of course does not stop here; it will continue to evolve and adapt to new circumstances and to exert its influence until deep into the seventeenth century, also on the new style of fight books that will start to appear on a large scale after the invention of the printing press.<sup>112</sup>

## IV. A HEMA CASE: THALHOFFER’S THOTT MANUSCRIPT

### IV.1 The *Hausbuch* genre as System of Knowledge

Let us review a pre-eminent example in HEMA Studies where a closer engagement with the kind of broad intellectual context marked by Aristotelian influences we discussed before would be helpful, since it clearly acts on it from various sides. Our focus will be on 1) genre issues (Hausbuch, *Füßternspiegel*, and their origins in the Aristotelian-Arabic *Secretum secretorum*-tradition); 2) the related question of the relevant systems of knowledge used (in the sense of Aristotle’s *Analytica posteriora*, which connects again to point 1); and finally 3) concrete references and paraphrases or quotations from various sources in seemingly unrelated domains, like medicine and astrology. My claim is that such a review can help answer many remaining historiographical questions both methodologically and qua content, or solve specific source-related interpretative conundrums.

In an excellent recent book on Tallhoffer’s Thott Ms. 290 n2<sup>113</sup>, C.H. Tobler dedicates a contribution to the final pages of the Codex with ‘Addenda and Esoterica’. Two elements in his discussion are relevant here: the format of the overall codex, and the medical and astrological references at its end. Tobler remarks that the Thott manuscript mixes fencing with ‘seemingly unrelated subjects’, and adds that it is not the only fight book that does so:

Fencing treatises mix liberally with those on siege craft, veterinary science, astrology, magical formulae, name-based divination, and recipes for food, gun-powder and the hardening of iron. In the case of the commonplace book Hs. 3227a, the fencing material is just one of these subjects. The 1459 Talhoffer manuscript is, however, first and foremost a *Fechtbuch*, so it raises the question, why is there other material included?<sup>114</sup>

We should add ‘medicine’ to that list. The attentive reader might note that the enumeration of subjects given by Tobler consists entirely out of mechanical and uncertain arts of the kind discussed before, namely to 1) armature, for the construction of protective martial equipment; 2) medicine, for the treatment of potentially inflicted wounds in a fight, 3) astrology, the art to find the perfect moment for a fight, and 4) magic, the art to influence the fights’ outcome. The choice is clearly less ‘unrelated’ than it might appear at first glance, especially when we take Talhoffer’s specialisation as master in judicial duelling into account.<sup>115</sup> Hence we can confirm Tobler’s conjecture that Talhoffer’s choice has something to do with ‘the holistic nature of medieval knowledge’, not just in general, but in the well-defined context of a specific format, destined for a particular audience. Tobler’s next question indeed concerns the format of the book, and its presumed purpose and user. He hypothesizes that, given the broad collection of subjects, it could

<sup>112</sup> Anglo, *Martial Arts in Renaissance Europe*.

<sup>113</sup> Tobler, ‘Addenda and Esoterica in the Thott Talhoffer Codex’, pp. 179-186. The catalogue entry at the Royal Danish Library can be found here: [https://soeg.kb.dk/discovery/fulldisplay?context=L&vid=45KBDK\\_KGL:KGI&search\\_scope=MyInst\\_and\\_CI&tab=Everything&docid=alma99123118027505763](https://soeg.kb.dk/discovery/fulldisplay?context=L&vid=45KBDK_KGL:KGI&search_scope=MyInst_and_CI&tab=Everything&docid=alma99123118027505763)

<sup>114</sup> Tobler, ‘Addenda and Esoterica’, p. 179.

<sup>115</sup> Cfr. Jaquet, *Six Weeks*.

be a *Hausbuch* (a commonplace book), but then states that it seems too neat in its design for merely the author's own use. Tobler apparently thinks that *Hausbücher* were made only for personal use, but we have examples where this is clearly not the case, which were commissioned and which, incidentally, closely match the contents of our codex. A nice example is the *Hausbuch von Schloss Wolfegg*<sup>116</sup>, a handwritten and artfully illustrated compendium commissioned by an unknown noble patron and executed by multiple authors in the fifteenth century. Its contents deal with interrelated topics of practical knowledge intended for use by a nobleman of the time.<sup>117</sup> It is true that Wolfegg is a bit on the seesaw between two genres: on the one hand the *Hausbuch*, on the other the *Fürstenspiegel*, as we saw before another literary connection to the Aristotelian tradition that came to Europe via the Arab world.<sup>118</sup> The Wolfegg *Hausbuch* contains to a large extent the same kind of material as the Thott manuscript, except that the part on fighting is replaced by an elaborate chapter on different kinds of activities of the 'adeliges leben' (noble life) like hunting and tournament fighting (the reader will notice: all are examples of mechanical arts), and taking a bath or a stroll with your beloved one. Interestingly, all this is preceded by a Latin chapter on the art of memory, to make sure it is understood that the information in the book should be mastered and made one's own properly.<sup>119</sup> The function of the *Hausbuch* was indeed to provide its owner with all the practical knowledge in an integrated manner he or she needed in order to run the *Haus*, the family property.<sup>120</sup> Understandably, a large concluding section of the book deals with household tools and war machines in the tradition of Konrad Keyser's *Bellifortis*: one had to be able to maintain and defend one's property. Another topic that Thott shares with Wolfegg and *Bellifortis* is a *Planetenkinder* astrology.<sup>121</sup> Contrary to those works, however, our codex does not present beautifully executed illustrations of the planets and their qualities as mythological *Turnierreiter*<sup>122</sup>; it rather contains an elaborated explanatory text to each planet.<sup>123</sup> It also contains instructions on what seems to be onomancy (divination based on someone's name), currency exchange and arithmetic, calculating with the abacus in the Indo-Arabic number system. This difference in precision regarding astrology compared to the Wolfegg might not be merely coincidental. The fact that the Thott Codex is so much focused on martial competence, combined with the renown of master Talhoffer as a specialist in judicial duels, might provide an explanation. For a distinguished master of judicial duelling, more sophisticated knowledge of various divination techniques would be vital in determining the constellation under which his client's fight will take place, and hence his chances of success. Like his fighting skills, the master shares his knowledge with his client in a specially designed *Hausbuch* with a specific *Wissensprogramm*<sup>124</sup> (coherent system of knowledge) designed to prepare someone fully and completely for the occasion — it was, after all, a matter of life and death. The Thott Codex as a whole thus constitutes a unique variant of *Hausbuch*, intended for noblemen who faced this particular kind of duelling situation. This interpretation is supported by the fact that onomantic

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<sup>116</sup> Keil, 'Wolfegger Hausbuch'.

<sup>117</sup> Fürbeth, 'Das Wissensprogramm des Hausbuches', pp. 200–226.

<sup>118</sup> Cfr. ft. 79.

<sup>119</sup> Hoppe, 'Das Wolfegger Hausbuch, der Bellifortis und der junge Maximilian', pp. 15–50.

<sup>120</sup> What Fürberth calls the 'Wisselnprogramm'; Fürbeth, 'Wissensprogramm'.

<sup>121</sup> Klingner, *Die Macht der Sterne. Planetenkinder*, pp. 17–28. This is again related to what we saw before about the use of emblems for the cognitive mental machine; Carruthers, *Craft of Thought*, p. 2. It is moreover part and parcel of the mnemotechnic art of memory whose use was widespread from Antiquity up to the Renaissance. Discussed in Carruthers, *The Book of Memory*.

<sup>122</sup> Tournament horseman, surrounded by the constellations his planet rules, and by the qualities and symbols. See Klingner, *Kraft der Sterne*, p. 128.

<sup>123</sup> Tobler, 'Addenda and Esoterica', p. 182.

<sup>124</sup> Fürbeth, 'Wissensprogramm'.

techniques are much more extensively treated in similar Thoffler manuscripts, like the Gotha<sup>125</sup>, but were typically included also in the original version of the *Fürstenspiegel*, the *Secretum secretorum*, but the dangerous *ars incerta* was left out of most later copies.<sup>126</sup> In the pressing case of a judicial duel coming up, the need to include it was apparently stronger than fear for ecclesiastic authority. The presence of exercises with the Jewish alphabet in the Thott Codex might also fit into that same vein. Name mysticism has strong roots in the Kabbalistic tradition.<sup>127</sup> Why would it otherwise make sense to ‘translate’ German names and sentences into Hebrew characters, if it were not for onomantic purposes? After all, Kabbalistic magical and symbolical practices had been around in Europe at least since the twelfth century and had been part of a for very good reasons more secretive mystical movement.<sup>128</sup>

## IV.2 Iatromathematical Themes in Ms. Thott 290.2<sup>o</sup>

A final thing Tobler discusses in his piece are the medical fragments that follow immediately on the astrological part in the Thott Codex. We discussed before the synthesis between Galen’s humoral pathology and Aristotelian-Ptolemaic cosmology. The composition of Thofflers’ ‘Esoterica’ in the Thott manuscript follows this pattern neatly, as Tobler rightly points out, however without drawing the proper conclusions from it.<sup>129</sup> In the astrological part, a lot of effort goes to an iatromathematical description of the planetary ‘natures’, and how they influence their human ‘children’ (*Kinder*). First, there is a very brief anatomical and physiological description of the main organ functions (with extra attention to the lungs and the importance of ‘good air’). Then follows an excerpt from a tract on humorpathology clearly in the Galenic-Aristotelian tradition, which is attributed to a certain ‘master Almonser,’ who is said to have written a book ‘Panthagin’ in which a hot and dry, or wet and cold nature is in line with the tradition attributed to the various organs.

In the book that is called *Pantegni*, Master al-Mansur says that some limbs in the human being are hot and dry, and some limbs are cold and wet in their nature.<sup>130</sup>

The various interpreters of the text seem to feel somewhat lost here. That ‘Panthagin’ refers to the *Pantegni*, the compendium of Galenic and Arab medical sources made by Constantine the African (discussed before) in the eleventh century seems clear enough, but who is ‘master Allmonser’, its supposed author? D. Bachmann (followed by Tobler) hypothesises on Wiktenauer

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<sup>125</sup> From its composition, it is clear that the Gotha Thoffler Codex belongs to the same category of judicial Hausbuch defined above, even though the Bellifortis kind of material is less present, and the medical part is not in there at all. The overall *Wissensprogramm* presented however, contains all the basic elements we indicated. The reason that the medical part lacks might be that a judicial duel was on life and death anyhow. The extensive elaboration of the onomantic part in Gotha stresses even more the shift in focus from ‘result’ to ‘right moment’ when compared to the Thott Codex. The Gotha (MS. Chart A 558) is kept at the library of the Universität Erfurt <https://nbn-resolving.org/urn:nbn:de:urmel-d010e5c0-48e3-4c36-afdb-ee09b55d647d6>

<sup>126</sup> Compare, e.g., with the onomantic tables in the Russian version. Surviving copies which still do contain that part are found in Spanish, English and Russian translations. Burnett, ‘The Prognostications of the Eadwine Psalter’, pp. 166–167; Ryan, *The Bathhouse at Midnight: An Historical Survey of Magic and Divination*, pp. 314–316.

<sup>127</sup> Tirosh-Samuels, ‘Kabbalah: A Medieval Tradition’, pp. 552–587.

<sup>128</sup> Dan, ‘The Kabbalah in the Middle Ages’.

<sup>129</sup> Tobler, ‘Addenda and Esoterica’, p. 185.

<sup>130</sup> ‘Maister allmonser spricht in dem buoch daz da haisset panthagin, daz ettliche gelider an dem menschen heiß und trucken sind und etliche kalt und fucht an der Nature.’ Transcription by Bachmann, translation by Garber, in: Chidester, Wiktenauer: ‘Hier lert der Jud Ebreesch’, [https://wiktenauer.com/wiki/Hie\\_lert\\_der\\_Jud\\_Ebreesch](https://wiktenauer.com/wiki/Hie_lert_der_Jud_Ebreesch)

that the reference could be to Mansur ibn Ilyas, an early fifteenth century Persian physician of some renown. But he definitely is not the author of the *Pantegni*, which probably explains why Bachmann claims that Mansur is referred to merely as an authority in Talhoffer's source.

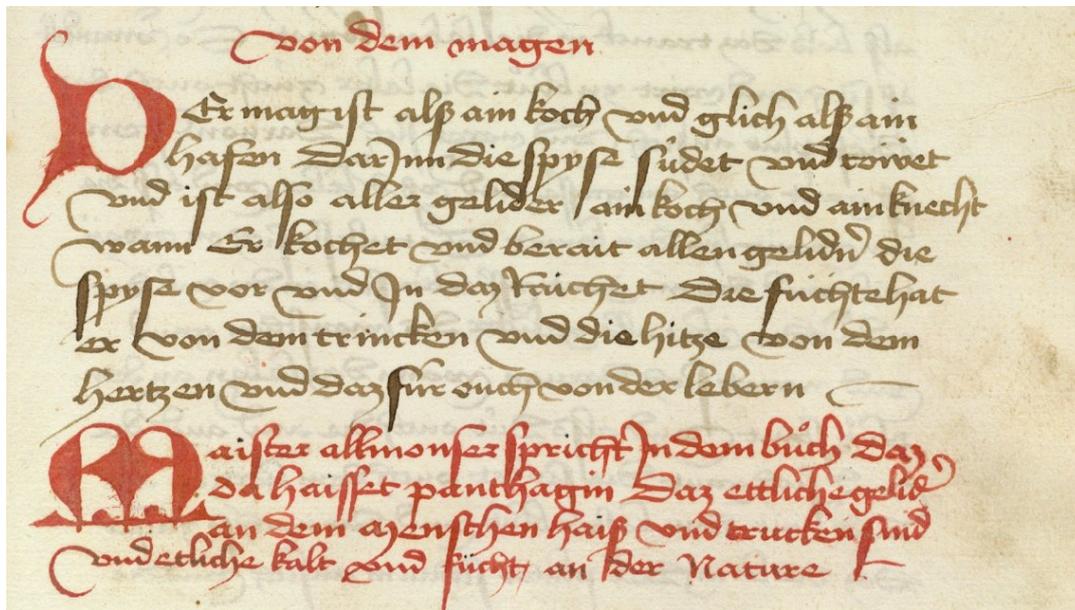


Figure 3: A page from the Talhoffer Thott Codex referring to 'Allmonser' © Royal Danish Library [Thott 290 folio, 141r]

However, given the time needed for transmission, it is highly unlikely that Mansur's writings would have reached Europe already to such an extent that someone like Talhoffer would have access to them, which casts doubt on the claim. Besides, the book title cited and its presumed author in Talhoffer's source have nothing to do with each other in reality: the Persian Mansur never wrote a *Pantegni*, and we know the person who did. How can this be explained?

My guess is that Talhoffer's source for the medical part of his manuscript is some iatromathematical compendium in the vernacular, that its author did not know Greek and possibly not even Latin, and that he therefore rendered the Greek title phonetically. The reason would be lack of understanding of its real meaning on the part of the copyist of the book. In fact, we need no further hypotheses, because we know exactly who 'master Allmonser' was. He was no medical author, but the governor of Ray and the patron of the very influential tenth century Arab physician Rhazes<sup>131</sup>, who dedicated his *Book of Medicine dedicated to Mansur* to him, a book that goes in the Latin world by the title 'Liber ad Almansorem', as we saw before. That book moreover enjoyed an enormous authority and reputation. Neither was the *Pantegni* written by 'maister Allmonser' but by Constantinus Africanus — as a compilation of parts of the works by Al-Majusi (Hali Abbas) and Galen, something we discussed before.

So here is my claim: Talhoffer quotes from an iatromathematical text source in the Galenic tradition, written in the vernacular and clearly a compilation in which authorship is confused, and that goes back on much older sources. We know that such books existed.<sup>132</sup> It is indeed very probable that Talhoffer got his medical information from works like, e.g., the *Deutsches*

<sup>131</sup> Bazmee Ansari, 'Abu Bakr Muhammad Ibn Yahya Al-Razi: Scholar and Scientist', pp. 155–166.

<sup>132</sup> Fāræus, 'Grundlegende Fakten über die Pathologie der Körpersäfte und ihrer Relikte in Volksmedizin', pp. 444–458.

*Salernitanisches Arzneibuch*.<sup>133</sup> Books like this were kept for centuries in the libraries of monasteries, and could well have been used by visitors from many places centuries after their production or acquisition. Being old for a text was, contrary to our own times, not considered a bad thing; it rather contributed to a sources's authority. There were hundreds of such books in circulation. This one serves merely as a possible example; I do not claim at all that Talhoffer used this book in particular in any way. In order to do that, a detailed textual analysis and comparison between the relevant parts of the two manuscripts has to be carried out, an endeavour which falls outside of the scope of this article.

## V. CONCLUSION

We tend to study fight books still too much as a genre in isolation. In order to understand the precise place they occupy in the sociocultural and historical fabric of their time, and to help them unlock a better understanding of our own culture in its dealings with armed combat and violence, we need to be broader and more specific at the same time. Fighting was an art, and part of a not always explicit, but nevertheless coherent system of knowledge. Detailed textual analysis combined with the evaluation of a number of sociocultural and sociohistorical data is the kind of work required to assess the origin and precise meaning of references to and quotes from, e.g., medical or astrological sources available at the time in fight books, and to place them within the prevailing larger intellectual framework. This framework turns out to be permeated with Aristotelian influences in many ways even where it is not immediately to be expected. This will remain equally true for many other subjects that appear in fight books, especially in those from the sixteenth and seventeenth century. It will also help us unlock the precise interconnections between different societal strata and practices: literacy, its distribution and its use; the nature and evolution of the interaction between different professional domains, didactical systems of knowledge and ways to convey them, knowledge and social mobility, to name only a few. The work can be tedious but it is definitely worthwhile, because it is only by studying these microphenomena that we get a much clearer and deeper insight in the macroworld of the period. I hope that this summary of topics and sources and its application to one particular case may be of some help to the HEMA researcher who wishes to do more than merely scratching the surface.

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<sup>133</sup> Like the Klosterneuburg, Augustiner-Chorherrenstift, Cod. 1239, second half of the 13<sup>th</sup> C., digitised by the Austrian Academy of Sciences: <https://manuscripta.at/diglit/AT5000-1239/0001>

## VI. BIBLIOGRAPHY

### VI.1 Primary Sources, Critical Editions, Translations and Bibliographies

#### Sources

Al-Razi (Rhazes), 'Kitab al-Mansouri' (*Book of Medicine dedicated to Mansur, or Liber ad Almansorem*), *The Book of Medicine Dedicated to Mansur and Other Medical Tracts*, Library of Congress: <https://www.loc.gov/item/2021666769>

Deutsche Salernitanisches Arzneibuch, *Klosterneuburg, Augustiner-Chorherrenstift, Cod. 1239* (13<sup>th</sup>-14<sup>th</sup>C), digitised by the Austrian Academy of Sciences: <https://manuscripta.at/diglit/AT5000-1239/0001>

R. Sanchez de Arévalo, *Speculum Vitae Humanae* (1468), translated by Heinrich Steinhöwel, *Spiegel des menschlichen Lebens* (1476), GW M38511, University Library of Heidelberg: <https://doi.org/10.11588/diglit.17645>

Hans Talhoffers 'Alte Armatur und Ringkunst' (1459), Royal Danish Library, Thott 0290 folio: [https://soeg.kb.dk/discovery/fulldisplay?context=L&vid=45KBDK\\_KGL:KGL&search\\_scope=MyInst\\_and\\_CI&tab=Everything&docid=alma99123118027505763](https://soeg.kb.dk/discovery/fulldisplay?context=L&vid=45KBDK_KGL:KGL&search_scope=MyInst_and_CI&tab=Everything&docid=alma99123118027505763)

Hans Talhoffers Gotha (MS. Chart A 558), Library Universität Erfurt: <https://nbn-resolving.org/urn:nbn:de:urmel-d010e5c0-48e3-4c36-afdb-ee09b55d647d6>

#### Editions

J. Brinkmann (ed.), *Die apocryphen Gesundheitsregeln des Aristoteles für Alexander den Grossen in der Übersetzung des Johann von Toledo*, Leipzig, 1914

C. Burnett (ed.), *Abū Mas'har on Historical Astrology. The Book of Religions and Dynasties (On the Great Conjunctions)*, Leyde, Brill, 2000

F. Cinato and A. Surprenant (eds.), *Le livre de l'art de combat (Liber de arte dimicatoria). Edition critique du Royal Armouries MS. I.33* (CNRS Editions, Paris, 2009)

J.P. Migne (ed.), H. de Sancto Victore, "Didascalicon", in *Patrologia Latina*, Tomus CLXXVI (1854) Col. 739–812

R.F. Kotrc and K.R. Walters, "A bibliography of the Galenic Corpus. A newly researched list and arrangement of the titles of the treatises extant in Greek, Latin, and Arabic". *Trans. Stud. Coll. Physicians Philad.* 1(4), (1979), pp. 256-304

#### Translations

M. Chidester, *The Long Sword Gloss of GNM Manuscript 3227a* (HEMA Bookshelf 2021)

E. Litta and M. Easton (transl., second draft), *The Royal Danish Library Ms. Thott 290 2°*: <http://www.fioredeiliberi.org/getty/>

R. Montraville Green (transl.), "Selected works of Galen", in: *Modern Manuscripts Collection, History of Medicine Division, National Library of Medicine* (Bethesda, 1951-1979)

J. Taylor, (transl., ed.), *The Didascalion of Hugh of St. Victor. A Medieval Guide to the Arts* (Columbia University Press, New York, 1961)

M. Chidester, Wiktenauer: “Hier lert der Jud Ebreesch”, subentry under “Talhoffer Fechtbuch (MS Thott.290.2°)”,  
[https://wiktenauer.com/wiki/Hie\\_lert\\_der\\_Jud\\_Ebreesch](https://wiktenauer.com/wiki/Hie_lert_der_Jud_Ebreesch)

## IV.2 Secondary literature

J. Acutt, Jamie, ‘Aristotelian Science behind a Medieval European Martial Art’, *Journal of Sports Science and Physical Education*, 71 (2016)

Acutt, Jamie, *Swords, Science and Society. German Martial Arts in the Middle Ages* (Fallen book Publishing, 2019)

Arráez-Aybar, Luis-Alfonso, Bueno-López, José L., Raio, Nicolas, ‘Toledo School of Translators and their influence on anatomical terminology’, *Annals of Anatomy*, 198, 2015, pp. 21-33

Allen, Michael J. B., *Studies in the Platonism of Marsilio Ficino and Giovanni Pico* (London and New York: Routledge, 2017 [1995])

Anglo, Sydney, *The Martial Arts of Renaissance Europe* (New Haven and London: Yale University Press, 2000)

Bazmee Ansari, A. S., ‘Abu Bakr Muhammad Ibn Yahya Al-Razi: Universal Scholar and Scientist’, *Islamic Studies*, 15 (3) (1976), pp. 155–166

Bauer, Matthias Johannes, ‘Ein Zedel Fechter ich mich ruem/Im Schwert un Messer ungestuem. Fechtmeister als protagonisten und als (fach)literarisches Motiv in den deutsch- sprachigen Fechtlehren des Mittelalters und der frühen Neuzeit’, in *Das Mittelalter* 19/2 (2014), pp. 302–325

Blum, Paul Richard, *Studies on Early Modern Aristotelianism*, Series: Scientific and Learned Cultures and Their Institutions, Volume: 30/7 (Brill, 2012)

Bergdolt, Klaus, Keil, Gundolf, ‘Humoralpathologie’. In: *Lexikon des Mittelalters*. Band 5 (1991), pp. 211–213

Bodemer, Heidemarie, *Das Fechtbuch*, Unpublished Dissertation (Frankfurt University, 2008):  
<http://dx.doi.org/10.18419/opus-5258>

Booth, Christopher, ‘Physician, Apothecary, or Surgeon? The Medieval Roots of Professional Boundaries in Later Medical Practice’, *Midlands Historical Review*, 2, 2018:  
<http://www.midlandshistoricalreview.com/physician-apothecary-or-surgeon-the-medieval-roots-of-professional-boundaries-in-later-medical-practice/>

Bourras-Vallianatos, Petros, and Zipser, Barbara (eds.), *Brill’s Companion to the Reception of Galen*; Series: *Brill’s Companions to Classical Reception*, vol. 17 (Leiden and Boston: Brill, 2019)

Brioist, Pascal et al., *Croiser le fer. Violence et culture d’épée dans la France (XVI-XVIII siècle)* (Champ Vallon, 2002)

Buellens, Pieter, *The Friar and the Philosopher. William of Moerbeke and the Rise of Aristotle’s Science in Medieval Europe*, series: *Studies in Medieval History and Culture* (London and New York: Routledge, 2023)

- Burgon, Anya, *The Mechanical Arts and Poiesis in the Philosophy and Literature of the Twelfth-Century Schools*, Unpublished Dissertation (Trinity Hall, University of Cambridge, 2018)
- Burnett, Charles S. F., 'The Prognostications of the Eadwine Psalter', in: M.T. Gibson *et al.*, (eds.), *The Eadwine Psalter: Text, Image, and Monastic Culture in Twelfth-century Canterbury* (Pennsylvania State University Press, 1992)
- Burnett, Charles S. F. and Jacquart, Danielle, 'Constantine the African and Al-ʿIbn Al-Abbās Al-Mağrībī: The *Pantegni* and Related Texts', in Charles S. F. Burnett and Danielle Jacquart (eds.), *Studies in Ancient Medicine 10* (Leiden 1994), pp.121-160
- Campbell, Donald, *Arabian Medicine and its Influence on the Middle Ages*, vol. I (Routledge, 2011 [1926])
- Carruthers, Mary, *The Book of Memory. A Study of Memory in Medieval Culture* (Cambridge University Press, 2008 [1990])
- Carruthers, Mary, *The Craft of Thought: Meditation, Rhetoric, and the Making of Images, 400–1200* (Cambridge University Press, 1998)
- Chaize, Pierre-Alexandre, 'Quand la pratique est Logique. Clés de lecture pour aborder la tradition liechtenauerienne', in Daniel Jaquet (ed.), *L'art chevaleresque du combat Le maniement des armes à travers les livres de combat (XIVe-XVe siècles)* (Alphil, 2013)
- Colish, Marcia L., *Medieval Foundations of the Western Intellectual Tradition 400-1400* (New Haven and London: Yale University Press, 1997)
- Couliano, Ioan-Peter, *Eros et Magie à la Renaissance 1484* (Paris: Flammarion, 1984)
- Dan, Joseph, 'The Kabbalah in the Middle Ages', in: J. Dan (ed.), *Kabbalah: A Very Short Introduction* (Oxford: Oxford Academic, 2007)
- De Munck, Bert and Symoens, Hildegard, 'Education and Knowledge: Theory and Practice in an Urban Context', in: B. Blondé *et al.*, *City and Society in the Low Countries, 1100-1600* (Cambridge University Press, 2018) [transl. of Gouden eeuwen: Stad en samenleving in de Lage Landen, 1100–1600 (2016)]
- De Vos, Paula, 'European *Materia Medica* in Historical Texts: Longevity of a Tradition and Implications for Future Use', *Journal of Ethnopharmacology* 132, 1 (2010), pp. 28–47
- Doig, James C., 'Suárez, Descartes and the Objective Reality of Ideas', *The New Scholasticism*, 57 (1977), pp. 350–371
- Drizis, Theodore J., 'Medical Ethics in a writing of Galen', *Acta Medico-Historica Adriatica* 6(2) (2008), pp. 333-6
- Eis, Gerhard, *Mittelalterliche Fachliteratur*, 2<sup>o</sup> aufl. (Stuttgart: J.B. Metzler, 1967)
- Fåræus, Robin, 'Grundlegende Fakten über die Pathologie der Körpersäfte und ihrer Relikte in Sprache und Volksmedizin', in: E. Grabner (eds.), *Volksmedizin: Probleme und Forschungsgeschichte* (Darmstadt 1967), pp. 444–458
- Fitzgerald, Brian D., 'Medieval Theories of Education: Hugh of St. Victor and John of Salisbury', *Oxford Review of Education*, 36, 5 (2010)

- Fleischmann, Suzanne, 'Linguistics, and the discourse of the Medieval Text', *Speculum* 65, 1 (1990), pp. 19-37
- de la Fontaine Verwey, Herman, 'Gerard Thibault and his Academie de l'Espée', *Quaerendo* VIII (1978)
- Franklin, James, 'Science by Conceptual Analysis: The Genius of the Late Scholastics', *Studia Neoaristotelica* 9 (2012), pp. 3–24
- F. Fürbeth, Frank, 'Das wissenvermittelnde Schrifttum des Mittelalters in deutsche Sprache', in W. Achnitz (ed.), *Deutsches Literatur-Lexikon. Das Mittelalter. Band 6: Das wissensvermittelnde Schrifttum bis zum Ausgang des 14. Jahrhunderts* (Berlin and New York: De Gruyter, 2014)
- Fürbeth, Frank, 'Das Wissensprogramm des Hausbuches', In: S. Hoppe, Christoph Graf zu Waldburg Wolfegg (eds.), *Das Wolfegger Hausbuch. Was ein Fürst an der Schwelle zur Neuzeit wissen musste* (Darmstadt: WBG Editions, 2022), pp. 200–226
- Gatti, Hilary, *Giordano Bruno and Renaissance Science* (Ithaca and London: Cornell University Press, 1998)
- Gens, Jean-Claude (ed.), *La logique herméneutique du XVII<sup>e</sup> siècle: J. C. Dannhauer et J. Clauberg* (Le Cercle Herméneutique, 2006)
- Gerabek, Werner E., Haage, Bernhard D., Keil, Gundolf, Wegner, Wolfgang (eds.), *Enzyklopädie der Medizingeschichte*, Band 3: O-Z; lemma 'Philosophie und Medizin' (Berlin and New York: De Gruyter, 2007), p. 1151
- Gevaert, Bert, van Noort, Reinier, 'Evolution of Martial Tradition in the Low Countries: Fencing Guilds and Treatises', in: D. Jaquet, K. Verelst, T. Dawson, *Late Medieval and Early Modern Fight Books. Transmission and Tradition of Martial Arts in Europe (14th-17th Centuries)* (Leiden: Brill, 2016), pp. 376-410
- Grabmann, Martin, *Die Geschichte der scholastischen Methode*, Akademische Druck- und Verlagsanstalt, 2 vols. (Graz, 1957 [1909])
- Graham, Hugh, 'Irish Monks and the Transmission of Learning', *The Catholic Historical Review*, 11, 3 (1925), pp. 431-442
- Green, Monica H., 'The Development of the *Trotula*', *Revue d'Histoire des Textes*, 26 (1996), pp. 119–203
- Green, Monica H., 'In search of an "Authentic" women's medicine: the strange fates of Trota of Salerno and Hildegard of Bingen'. *Dynamis Acta Hispanica Ad Medicinae Scientiarumque Historiam Illustrandam*, 19 (Granada, 1999), pp. 25–54
- Grendler, Paul F., *Schooling in Renaissance Italy: Literacy and Learning, 1300–1600* (Baltimore: Johns Hopkins University Press, 1989)
- Grossi, Paolo (ed.), *La Seconda scolastica nella formazione del diritto privato moderno* (Milan: Giuffrè, 1973)
- Hadot, Ilsetraut, *Arts libéraux et philosophie dans la pensée antique* (Paris: Études Augustiniennes, 1984)
- Hankinson, Robert J., 'The Man and his Work', in: *The Cambridge Companion to Galen* (Cambridge, 2008), pp. 1-34

- Hoppe, Stephan 'Das Wolfegger Hausbuch, der Bellifortis des Konrad Kyesser und der junge Maximilian von Habsburg. Höfische Buchprojekte in einer Zeit des Wandels', in: Maria Effinger *et. al.* (eds.), *Von analogen und digitalen Zugängen zur Kunst Festschrift für Hubertus Koble zum 60. Geburtstag* (Heidelberg, 2019), pp. 15–50
- Hoye, William J., 'Die mittelalterliche Methode der Quaestio', in: *Philosophie: Studium, Text und Argument*, N. Herold, B. Kensmann and S. Mischer (Münster, 1997)
- Hanegraaff, Wouter J., *Western Esotericism: A guide for the Perplexed* (Bloomsbury, 2013)
- Huizinga, Johan, *Homo ludens* (Boston: Beacon Press, 1955)
- Jaquet, Daniel, 'Six Weeks to Prepare for Combat: Instruction and Practices from the Fight Books at the End of the Middle Ages, a Note on Ritualised Single Combats', in: *Killing and being Killed: bodies in Battle* (Berlin: De Gruyter, 2017)
- Jacquart, Danielle, 'Aristotelian Thought in Salerno', in P. Dronke (ed.), *A History of Twelfth Century Western Philosophy* (Cambridge University Press, 1988)
- Jolivet, Jean, *Perspectives médiévales et arabes* (Paris: Vrin, 2006)
- Kalachanis, Konstantinos and Michailidis Ioannis E., 'The Hippocratic View on Humours and Human Temperament', *European Journal of Social Behaviour* 2 (2) (2015), pp 1-5
- Keil, Gundolf, *Humoralpathologie*. In: Werner E. *et al.* (eds.): *Enzyklopädie Medizingeschichte*, Band 2 (Berlin: De Gruyter, 2005), pp. 641–643
- Keil, Gundolf, 'Wolfegger Hausbuch', in: *Die deutsche Literatur des Mittelalters. Verfasserlexikon*. 2. Aufl. Band 10 (Berlin: De Gruyter, 2012)
- Keil, Gundolf, 'Deutsches salernitanisches Arzneibuch', in W. Stammer et al. (eds.), *Die deutsche Literatur des Mittelalters. Verfasserlexikon* 11 (Berlin: De Gruyter, 2014)
- Kieckhefer, Richard, *Magic in the Middle Ages* (Cambridge University Press, 1989)
- Kleinau, Jens P., 'On the Five Words "Vor/Nach, Indes, Stark/Schwach"', blogpost *Hans Talhoffer. A Historical Martial Arts blog* (2015):  
<https://talhoffer.wordpress.com/2015/03/05/on-the-five-words-vornach-indes-starkschwach/>
- Kleinau, Jens P., 'Engineers and masters of warfare', Blogpost *Hans Talhoffer. A Historical Martial Arts blog* (2011):  
<https://talhoffer.wordpress.com/2011/07/07/engineers-and-masters-of-warfare/>
- Klingner, Annett, *Die Macht der Sterne. Planetenkinder: ein astrologische Bildmotiv in Spätmittelalter und Renaissance* (Berlin: Arte Verlag, 2017)
- Kristeller, Paul Oskar, 'The School of Salerno: Its Development and its Contribution to the History of Learning'. *Bulletin of the History of Medicine*, 17 (2) (1945), pp. 138–194
- Kurze, Dietrich, 'Lob und Tadel der artes mechanicae unter besonderer Berücksichtigung des Speculum vite humane des Rodrigo Sánchez de Arévalo (1467) - mit drei Anhängen', in: K. Schultz (ed.), *Handwerk in Europa: Vom Spätmittelalter bis zur Frühen Neuzeit* (Berlin and Boston: Wissenschaftsverlag, 1999)
- Leijenhorst, Cees, Lüthy, Christoph and Thijssen, Hans (eds), *The dynamics of Aristotelian natural*

- philosophy from Antiquity to the seventeenth century* (Leiden: Brill, 2002)
- Lemay, Richard, 'The teaching of astronomy in medieval universities, principally at Paris in the fourteenth century', *Manuscripta*, vol. XX (1976)
- Lemay, Richard, (ed.), *Kitáb al-madkhal al-Khabír. Introductorium maius in astrologiam. Abú Ma'shar al-Balkhí. Édition critique* (Naples: Istituto Universitario Orientale, 1997)
- Marenbon, John, *Later Medieval Philosophy (1150-1350)* (London & New York: Routledge, 1991)
- Marenbon, John, *Boethius* (Oxford: Oxford University Press, 2003)
- Marrou, Henri-Irénée, *La connaissance historique* (Paris: Editions du Seuil, 1954)
- Masi, Michael, 'The Liberal Arts and Gerardus Ruffus' Commentary on the Boethian De Arithmetica', *The Sixteenth Century Journal*, Vol. 10, No. 2 (1979), pp. 23-41
- McKirahan, Richard D., *Principles and Proofs: Aristotle's theory of demonstrative science* (Princeton University Press, 1992)
- McVaugh, Michael, 'Galen in the Medieval Universities, 1200-1400', in Petros Bouras-Vallianatos and Barbara Zipsler (eds.), *Brill's Companion to the Reception of Galen*; Series: *Brill's Companions to Classical Reception*, vol. 17 (Leiden and Boston: Brill, 2019)
- Metcalf, Alex, *The Muslims of Medieval Italy* (Edinburgh University Press, 2009)
- Mondschein, Ken, 'The Number of Motion: Camillo Agrippa's Geometrical Fencing and the Enumeration of the Body', *Journal of the Northenr Renaissance* (6) (2014)
- Montebelli, Vico, 'Luca Pacioli and perspective (part I)', *Lettera mathematica* 3, 3 (2015), pp. 135-141
- Moran, Pádraic, 'Greek in Early Medieval Ireland', in: *Multilingualism in the Graeco-Roman worlds*, A. Mullen and P. James (eds.) (Cambridge, 2012)
- Müller, Jan-Dirk, 'Bild—Vers—Prosakommentar am Beispiel von Fechtbüchern. Probleme der Verschriftlichung einer schriftlosen Praxis', in H. Keller, K. Grubmüller, N. Staubach (eds.), *Pragmatische Schriftlichkeit im Mittelalter: Erscheinungsformen und Entwicklungsstufen* (Akten des Internationalen Kolloquiums, 17.–19 Mai 1989) (München: Fink, 1992)
- Nederman, Cary J., 'The Meaning of "Aristotelianism" in Medieval Moral and Political Thought', *Journal of the History of Ideas*, Vol. 57, No. 4 (1996)
- Petersen, Charles C., 'The *Strategikon*. A forgotten Military Classic', *Military Review*, vol. lxxii, 8 (1992)
- Phillips, Philip Edward, 'The English "Consolation of Philosophy": Translation and Reception', *Carmina Philosophiae*, 17 (2008), pp. 97-126
- Price, Brian R., *The Martial Arts of Medieval Europe*, Unpublished Dissertation (University of North Texas, 2011)
- Riecke, Jörg (ed.), *Sprachgeschichte und Medizingeschichte. Texte – Termini – Interpretationen*, series: *Studien und Quellen zur Geschichte der Deutsche Sprache und Literatur*, band 16 (Berlin: De Gruyter, 2017)

- Rubboli, Marco and Cesari, Luca (eds.), *Fiore Dei Liberi, Flos Duellatorum. Manuale de arte del combattimento del XV secolo* (Rimini: Il Cerchio, 2005)
- Ryan, William Francis, *The Bathhouse at Midnight: An Historical Survey of Magic and Divination in Russia* (Pennsylvania State University Press, 1999), pp. 314–316
- Schipperges, Heinrich, *Arabische Medizin im lateinischen Mittelalter* (Springer, 1976)
- Schmidt, Harald, *Temperamentenlehre (Neuzeit)*. In: Werner E. et al. (eds.): *Enzyklopädie Medizingeschichte* (Berlin and New York: De Gruyter, 2005), pp. 1382-1383
- Schmieja, Horst, *Secundum aliam translationem — Ein Beitrag zur Arabisch-Lateinischen Übersetzung des grossen Physikkommentars von Averroes*, in Gerhard Endress and Jan A. Aertsen, *Averroes and the Aristotelian Tradition* (Leiden, Boston, Köln: Brill, 1999), pp. 316-338
- Schmitt, Charles B., *Aristotle and the Renaissance* (Cambridge MA, 1983)
- Schönberger, Rolph, *Was ist Scholastik?* (Hildesheim: Bernward Verlag, 1991)
- Stahl, William Harris, Johnson, Richard, & Burge, Evan Laurie, *Martianus Capella and the seven liberal arts. Two volumes* (New York: Columbia University Press, 1971-1977)
- Tirosh-Samuels, Hava, 'Kabbalah: A Medieval Tradition and its Contemporary Appeal', *History Compass* 6/2 (2008), pp. 552-587
- Tobler, Christian Henry, 'Addenda and Esoterica in the Thott Talhoffer Codex', in M. Chidester (ed.), *Alte Armatur und Ringkunst. The Royal Danish Library Ms. Thott 290 2°* (HEMA Bookshelf, 2020), pp. 179-186
- Torrell, Jean-Pierre, *Initiation à saint Thomas d'Aquin* (Cerf, collection Vestigia — Pensée antique et médiévale, 2002 [1993])
- Toulmin, Stephen, *Cosmopolis. The Hidden Agenda of Modernity* (Chicago, 1990)
- Trouillard, Jean, 'La "Virtus Gnostica" selon Jean Scot Érigène', *Revue de théologie et de philosophie*, 115 (1983), pp. 331–354
- Tschanz, David W., 'The Arab Roots of European Medicine', *Aramco World*, (May/June 1997), pp. 20-31.  
<https://bxscience.edu/ourpages/auto/2011/12/14/29951124/Arab%20Roots%20of%20European%20Medicine.pdf>
- Verelst, Karin, et al., 'Introduction', in D. Jaquet, K. Verelst, T. Dawson, *Late Medieval and Early Modern Fight Books. Transmission and Tradition of Martial Arts in Europe (14th-17th Centuries)* (Leiden: Brill, 2016)
- Verelst, Karin, 'Finding a Way through the Labyrinth: Some Methodological Remarks in Critically Editing the Fight Book Corpus', in: D. Jaquet, K. Verelst, T. Dawson, *Late Medieval and Early Modern Fight Books. Transmission and Tradition of Martial Arts in Europe (14th-17th Centuries)* (Leiden: Brill, 2016), pp. 117-188
- Vigarelo, Georges, *Le corps redressé. Histoire d'un pouvoir pédagogique* (Paris: Delarge, 1978)
- Wagner, David L., *The Seven Liberal Arts in the Middle Ages* (Indiana University Press, 1986)
- Watt, John W., *The Aristotelian Tradition in Syriac* (London and New York: Routledge, 2019)

Weijers, Olga, *In Search of the Truth. A History of Disputation Techniques from Antiquity to Early Modern Times* (Turnhout: Brepols, 2014)

Weijers, Olga, *Le maniement du savoir. Pratiques intellectuelles à l'époque des premières universités (XIII<sup>e</sup>-XIV<sup>e</sup> siècles)* (Turnhout: Brepols, 1996)

Weisser, Christoph, 'Iatromathematik', *Enzyklopädie Medizingeschichte*, Band 2 (Berlin and New York: De Gruyter, 2005)

Whitney, Elspeth, 'Paradise Restored. The Mechanical Arts from Antiquity through the Thirteenth Century', *Transactions of the American Philosophical Society*, 80, 1 (1990)

Wickham, Chris, 'Historical Transitions: A Comparative Approach', *The Medieval History Journal*, 13, 1 (2010)  
<https://journals.sagepub.com/doi/abs/10.1177/097194580901300101?journalCode=mhja>

Winterbottom, Michael, 'Martianus Capella' in *Texts and Transmission: A Survey of the Latin Classics*, edited by L. D. Reynolds (Oxford: Clarendon Press, 1983)

Yates, Frances Amelia, *Giordano Bruno and the Hermetic Tradition* (Chicago, 1964)

### VI.3 Images

Fig. 1: *Artes armaturae*. From Rodericus Zamorensis *Spiegel des menschlichen lebens* © Universitätsbibliothek Heidelberg [GW M38511, 60v]

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